

disk

USER

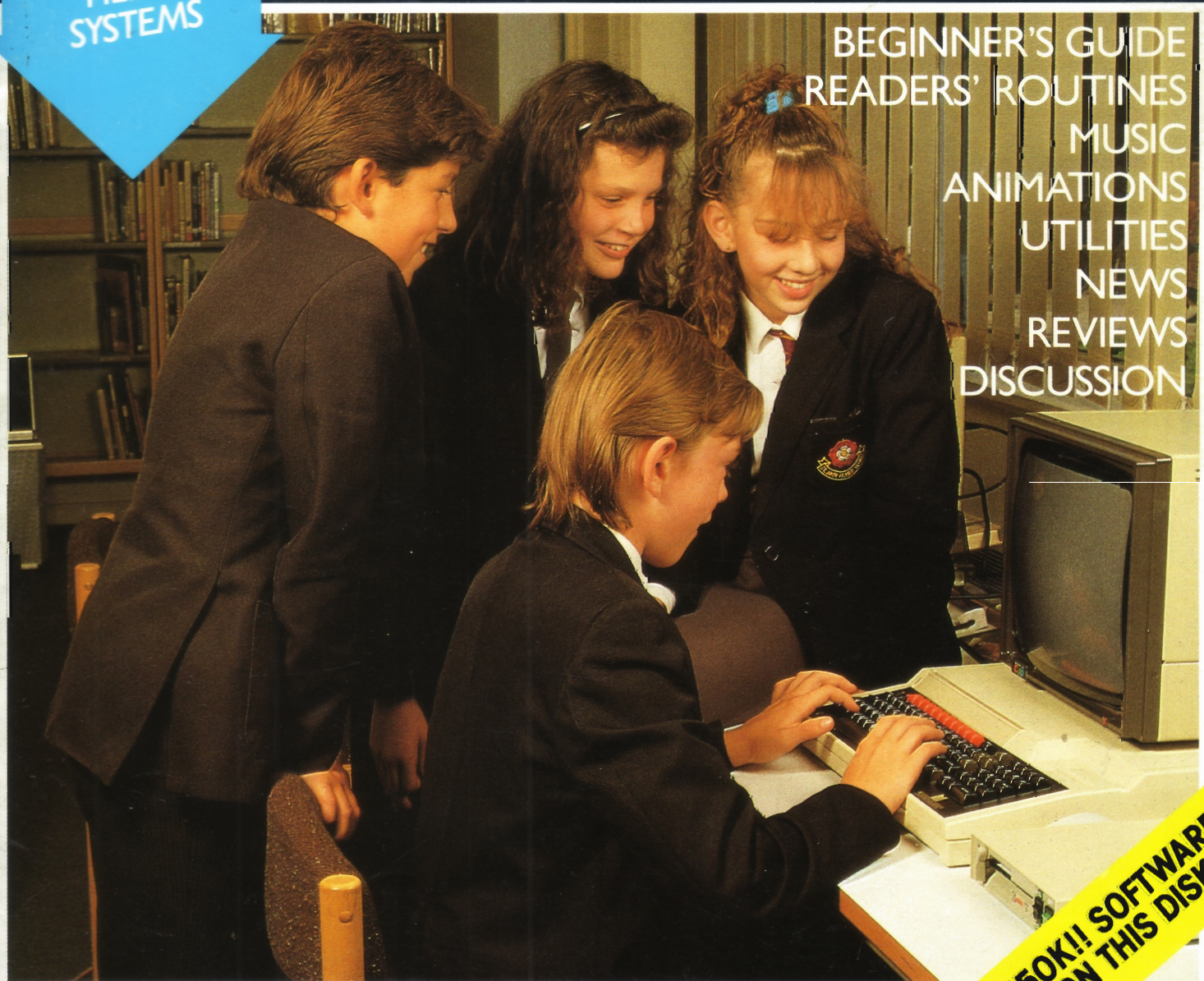
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use your disk system effectively.

In the 1987 Magazine Publishing Awards organised by The Publisher, Disk User for the BBC Micro won a second place certificate. The experienced panel of judges praised the "sheer value of the cover-mounted disk that formed part of the new publication's concept".

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disk USER

Disk User Number Thirteen November 1988

Editor: Andrew Brown
Software Consultant: Matthew Fifield
Group Editor: Mark Webb
Advertisement Manager: Marcus
Advertisement Copy Control: Sonny
Mehta

his magic Grimoire in our second installment of how to become a Games Wizard

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Takes a nostalgic look back at some of Peter Scott's best games, and tells you how to cheat at them!

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Practise French grammar in the the quiet of your own home without anyone to laugh at you

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A nifty little front end for all your programs

Ape 29

Overcome all those little copying problems with this powerful utility

Master Word 30

Des Catlin is your host as we play this TV derived game

Disk User is supplied on a 40 track disk format and can be run without conversion on a 40 track drive.

If you have 40/80 switchable drives then make sure the drive is switched to the 40 option.

For 80 track only drive owners, a conversion program is provided – see Disk Instructions

All programs, except for Music Editor, Ape, and Quare can be copied to and used on ADFS systems



IN THE MAGAZINE

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How to get the best out of Disk User – including 40 to 80 track conversion. Make sure you get the full picture by reading these pages before using your Disk User disk

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Teacher Dorian Goring unlocks the Art room door and gives a lesson on colour printing technique

Transfer 13

Helping you get the most out of your disk

Gameplan 20

Peter Scott reads more spells from

DISK DOCUMENTATION

ALL MODEL B, B+ and Master Series compatible

Getting Into Print 10

Three 20k screens to get your printing teeth into.

Music Maker 14

A full suite of programs, editing, transposing, playing and more to aid music composition

Mode 8 16

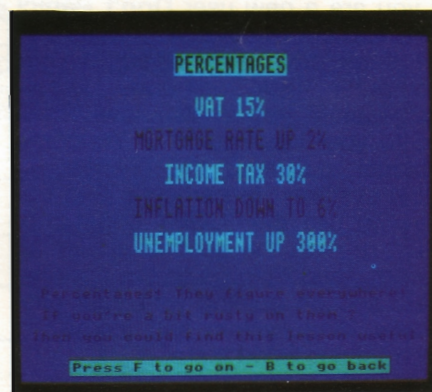
16 Colours on screen, and only 10k used

Calform 17

Professional quality presentation of course material is possible with this sophisticated shell program

Percentages 17

A sample Calform lesson to show you how it's done



ELECTRON COMPATIBLE:

Ecrivez

Calform

Percentages

Masterword

Ape

Silk Screen Printing

Reverse Table

DISK INSTRUCTIONS

Disk Instructions

To get the best from your copy of *Disk User*, please carefully read the instructions below. We have made *Disk User* able to run on a very wide range of systems.

All Users

Please make a **Backup copy** and keep the original in a safe place with a Write-Protect tab on. You should use this copy as your working copy, as many of the programs need to write to the disk, and doing this will diminish the usefulness of the original, and may not be possible anyway due to the 31 file limit imposed by many DFSs.

New Users

If you are a new user **Don't Panic!** first find out whether you have 40 or 80 track drive(s) attached to your computer (ask someone knowledgeable if you don't know). Then go to your User guide or Welcome Manual and read the chapter on filing systems. In particular find out how to use the *COPY command. Next re-read the section above **All Users**, and then go to the appropriate section dealing with your particular filing system and follow the instructions listed there.

Advanced Users

You do not need help to run *Disk User*, but do refer to the instructions for the filing system you are using,

and **Don't forget to make a Backup copy.**

40 Track Drive Systems

Disk User is supplied on a 40 track disk so will work on any 40 track BBC Micro system (at least, any that we know of!) straight away. Remember to make a working copy before use.

40/80 Switchable Drives

If you have this sort of drive, you can use *Disk User* straight away with the drive switched to the 40 track setting; don't forget to make a copy for normal use. However, you may wish to copy the disk on to 80 track format, in which case, with a single drive, you should follow the instructions for 80 track systems.

With two switchable drives, or one switchable drive set to 40 track and an 80 track drive (or even a 40 track drive and an 80 track drive), you can easily copy *Disk User* on to 80 tracks; put *Disk User* into drive 0 (40 tracks) and a blank formatted 80 track disk into drive 1 (80 tracks) and type:

***COPY 0 1*.*<RETURN>**

Here <RETURN> means hitting the return key. You can set the boot

option to drive one by typing:

***DRIVE 1<RETURN> *OPT 4
3<RETURN>**

80 Track Drives

Because *Disk User* is supplied as a 40 track disk, 80 track disk drives have to double-step through the disk. Probably the most convenient thing to do is to copy *Disk User* on to 80 track format. This can be done in two ways.

If your filing system allows double-stepping, we recommend using the system's own command. As a general rule, built-in 40-to-80 track converters should be used where available; the documentation for your filing system or utility ROM will give full instructions, and we give suggestions for some better-known systems further on.

Not all filing systems have facilities for double-stepping; Acorn's DFS is one such system. To overcome this, a program called CHANGE is supplied on the *Disk User* disk in a section which can be accessed by 80 track drives.

Using CHANGE

Insert *Disk User* into an 80-track drive (or 40/80 switched to 80-track) and type:

***CHANGE <RETURN>**

The program will prompt you to insert a pre-formatted blank 80 track disk when it is ready to write to it (you will have to swap back and forward between the two disks several times if you are using only

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one drive). Once this is completed, you can use the newly created 80-track version of *Disk User* and keep the original as the back-up.

Our suggestions on how to use *Disk User* on some popular DFSs now follow.

Master 128

This Acorn DFS has a software double stepping mode for a 80 track drive. Set it with the command ***DRIVE 0 40 <RETURN>** and then hit **<BREAK>**

Disk User will then work without any need for conversion. However this may not allow writing to the disk in 40 track mode; in any case, you should make a working copy, so copy to a 80 track disk.

DFS on Master Compact

The DFS is supplied as an image on some versions of the Master Compact Welcome disk (or is available from Acorn on disk) and this may be used in conjunction with a 5<1/4> inch 40 track disk drive to run Disk User. Please note that we **cannot** at present supply *Disk User* on a 3<1/2> inch disk (if there is sufficient demand, we may be able to in the future).

Opus DDOS/Challenger 3

If you are using the Opus DDOS disk filing system or Challenger 1.0/DDOS then issue the command

***4080 AUTO <RETURN>**

or

***ENABLE 40/80 <RETURN>**

and Disk User will work without any need for conversion.

Challenger 3

If you have the later ROM version Challenger 1.1 then issue the command

***OPT 8,1 <RETURN>**

to achieve the same result. Disk User will work effectively from the RAM disk. Use

***COPY 0 4 *.* *CONFIG 4=0 0=4**

***OPT 4 3**

to run from RAM disk

Solidisk DFS

With the Solidisk DFS 2.1 and 2.0 you can set a software double stepping mode for a 80 track drive with the command

***ENABLE 80 <RETURN>**

Disk User will then work without any need for conversion.

Watford DFS

The Watford DFSs also have a software double stepping mode for an 80 track drive. Consult your manual for the appropriate FX call or command. Disk User will then work without any need for conversion.

Disk failure

If for any reason your copy of Disk User will not work on your system then please carefully re-read the instructions given above.

If you still experience problems then:

1. If you are a subscriber, return it to: **INFONET LTD, 5 River Park Estate, Berkhamsted, Herts HP4 1HL.**

2. If you bought it from a newsagents, return it to **Disk User Replacements (BBC), Diskopy Labs, 20 Osyth Close, Brack Mills, Northampton NN4 0DY. ☎ 0604 760261.**

Please use appropriate packaging, cardboard stiffener at least, when returning a disk. Do not send back your copy of the magazine. Only the disk please.

Editorial/Technical Enquiries

You can make telephone enquiries about *Disk User* on Wednesday and Thursday afternoons on 0733 53355 (please ask for *Disk User* Editorial). Enquiries in writing to the following address: **Disk User, 6C Belgic Square, Off Padholme Road, Peterborough PE1 1XF.**

ADFS Users

All files on this disk except Ape, Music Editor and Quare work with the ADFS. If any problems should arise, examine the program listings and remove DFS only operating system commands (e.g. ***DRIVE 0**) and replace them with the ADFS equivalent.

Note:- Disk User 13 fills a 40 track disk. Any software that may need extra disk space to save information must be copied onto a blank disk. ie Music Editor, Ape, Quare and Reverse Byte Table.

Disk User 13 November '88

Electron Compatible Files:-

Ecrivez CAL Form Master Word Ape

Silk Screen Reverse Byte Table

All change - 40 track to 80 track convertor.

Files:-

CHANGE - Machine code file.

Caution:- This program may corrupt your disk if misused. To use type

***RUN CHANGE <RETURN>**

New Disk Menu - With new advertising billboard.

Author: Matthew Fifield Files:-

DUMENU - BASIC program comp

Machine code file COMSCR2

Compacted screen file

All you readers with artistic talent can send in your masterpieces and if we have room on the disk we may include your artwork with the disk menu.

Author: Paul Marchant Files:-

M8SO - BASIC program MODE8 - BASIC program

Reverse Bytes Table - Peter Scott sheds light on his clever methods.

Author: Peter Scott (obviously!) Files:-

TABLE - BASIC program

Ape - Clone programs on your disk in a single step.

Author: Dov Rosner (who else?) Files:-

Ape - Machine code file

Quare - This program will take care (quare!) of loading your programs.

Author: Ivor Hewitt Jnr. Files:-

QUARE - BASIC program

Ecrivez - Mind your french with this excellent teaching helper.

Author: John Tissandier Files:-

ECRIVEZ - BASIC program CODE -

Data file DATA - Data file

Music Editor - Make beautiful melodies with great ease.

Author: R. Dorling Files:-

X.MUSIC - Compacted file EXPAND

- BASIC program MUSICLD - BASIC program

CAL Form - Introducing a new way to write educational programs.

Author: K T Dwight Files:-

CALFORM - BASIC program

Percentages - An example of what CAL Form can help you to do.

Author: K T Dwight Files:-

LESSON - BASIC program percent - BASIC program

Animation - Improved menu with the latest animation.

Author: Abbas/J.C. Kenney Files:-

ALFABET - BASIC program I.MENU

- Data file M.ALPHA - Data file

Master Word - A TV style quiz finally reaches the pages of Disk User.

Author: Des Catlin Files:-

M.WORD - BASIC program

Silk Screen - Print in full colour with simple dot matrix printers.

Author: Dorian Goring Files:-

comp - Machine code PICSHOW -

BASIC program COMHAR - Com-

packed screen file COMHAB -

Compacted screen file COMHAX -

Compacted screen file
MODE 8 - 16 colours in a 10K
screen mode is it a dream?

DISK NEWS

Desktop Diary

11-13 November – Electron and BBC Micro Show. New Horticultural Halls time again. The fabulous Sue (who? – Clive) will be on hand at the A&B stand. Presumably the show will be chock full of super-cheap disk, printer paper/stands, monitors, etc, etc.

17 November 1988 – Into the Future with ESG. Organised by RESOURCE, aims to explore how the Government's Education Support Grant is taking effect. Speakers from NCET, DES, TVEI and LEAs. Also discussed will be the impact of 16 and 32 bit computing. **Contact** Anne Swainston or Kevin Smith, RESOURCE, Exeter Road, off Coventry Grove, Doncaster DN2 4PY. ☎ 0302 63800/63784.

December 6-8 Interactive '88. Brighton Conference centre. Go see the AIV Domesday system in action.

Royal software

Micro Aid have jumped on the bandwagon pretty quickly with the timely re-release of the *Family History System* for the BBC Micro *co-incidentally* appearing a few days after the arrival of the Duke and Duchess of York's first child.

The Database supplied with the package containing a pretty interesting genealogical history of the royal family now includes the record of the Princess of York – born on the 8th of the 8th 1988.

Contact: Micro Aid, 25 Fore Street, Praze Cramborne, Cornwall, TR14 0JX.
☎ (0209) 831 274.

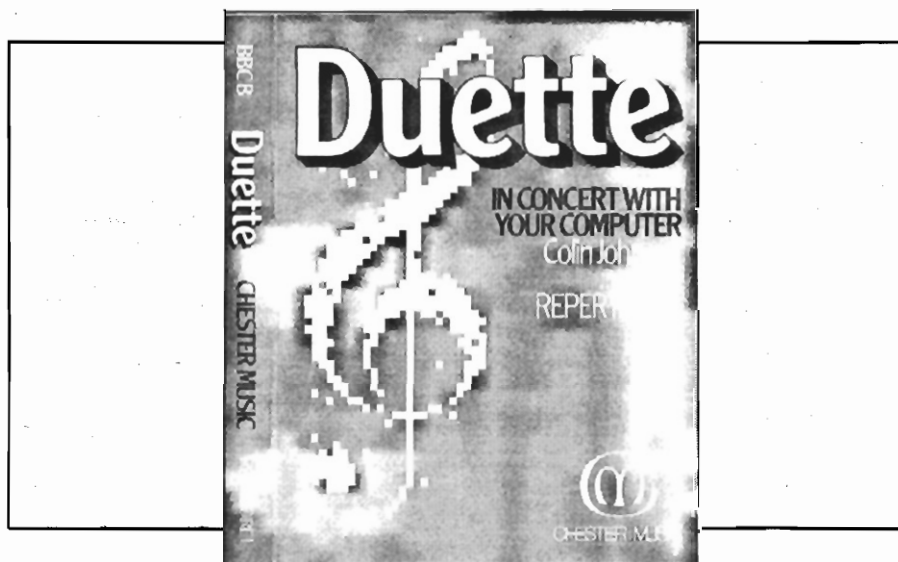
Forms file

MewSoft have come up with a neat little alternative to the Fax*File package for the Beeb B.

In response to many people writing in about the package, asking asking if it were possible to design larger forms, MewSoft have come up with just that! A forms designer for A4 pages – and more.

Forms of up to A4 size can be designed with text, horizontal lines, boxes and grids to create images on the screen which can then be dumped off to a Epson compatible.

The forms designer runs on any Model B with shadow RAM and any Epson printer with CRT Mode, it costs £9.95 – add on an extra pound



if you want a 3½" ADFS disc.
Contact: MewSoft, 11 Cressey Road, London, NW3 2NB.
☎ 01 267 2642.

View family goes home

Acorn Computers and Colton Software have announced an agreement covering the sales, marketing and support of the View family.

Acorn have now passed over all rights to the package back to Colton software, the writers and creators of the suite of software packages, namely VIEW, ViewStore, ViewSheet and ViewSpell. This move enables Colton Software to support the View range of packages across a wider spectrum of machines.

Colton Software have already been very successful with Pipedream (a version of View Professional) on the Archimedes and the IBM PC; it is also the mother tongue for the Cambridge Computer Z88 portable micro.

RESOURCE conference

There has been a good response to the early publicity of RESOURCE's 1988 conference and exhibition, "Into the Future with ESG". 180 Delegates and 28 exhibitors have now reserved places at Doncaster Exhibition and Conference Centre on the 17th November.

Dr Philip Lewis (of DES) and Dr Noel Thompson (of NCET) will be keynote speakers and there will be conference seminars discussing the effect the new 16 bit and the 32 bit Archimedes technology will have

and also topics on the thorny subject of the Education Support Grant. There will be plenty to look at and talk about from the like of Acorn, CERES, MESU, DES, NERIS and Research Machines. See Desktop Diary for further information.

Music help

A Duette was launched recently at the Computer Music Fair.

The package was programmed by relative newcomer to the scene Colin Johnson and is designed to be used in music classes in schools as an audio music text book which should help students of acoustic instruments (as opposed to all this new fangled MIDI stuff) to associate notes on a staff to sounds from an instrument.

Duette is available for the Beeb on disk or tape from:

**Chester music, J & W
Chester/Edison, Wilhelm Hansen
London Ltd, Eagle Court, EC1M
5QD ☎ 235 6947**

IV From ESM

New products mooted from educational software house ESM include an Interactive Video disk. Targeted across the educational market, versions for the BBC, Nimbus and IBM PC are on the drawing board. Also projected are a set of courseware disks aimed specifically at the Further Education market, which is burgeoning as government regulations now force FE colleges to make a profit.

**ESM, 32 Bridge Street Cambridge,
CB2 1UJ**

Laser support

Datathorn Systems have launched a catalogue of 'soft' fonts for the Epson GQ3500 laser printer. The fonts are downloaded from disc into the memory of the printer (RAM) as opposed to adding permanent font cards (ROM) in the two slots available.

The software downloading program and first font costs £25.00 with subsequent fonts £7.50 each, up to eight on the disc (excluding VAT). Datathorn also supply a forms design program which utilises the line drawing capabilities of the printer.

Datathorn Systems Ltd, George House, 50 Spring Grove, Loughton, Essex, IG10 4QD.
☎ 01 508 4904.

Gamma graphics

System Gamma, from Minerva Systems, is a 32K ROM for creating graphical displays from numerical data. System Gamma follows a similar approach to the System Delta database management system with the ROM itself providing a number of * commands which provide machine code routines for high level functions, but the user interface must be written in BBC BASIC. As with System Gamma, you may use the interface provided, or else purchase a copy of the optional *programmers reference guide* so that you can write your own BASIC routines incorporating the additional commands.

Unlike System Delta, however, Gamma is not immediately available to all BBC owners since it requires use of both the GXR commands and shadow RAM for the screen. Hence, it is compatible with the Master 128 and Compact, the B+ with GXR ROM fitted, or a Model B with both a shadow RAM and GXR upgrade. Minerva are reported to be negotiating with Acorn to be able to provide an inexpensive GXR ROM for purchasers of the system. The system is supplied in 32K (double decker) ROM format and DFS format disc in five and quarter inch version. However, the latter is not protected and the files may easily be transferred to an ADFS disc if preferred.

System Gamma costs £49.95.

Available from: Minerva Systems, 69 Sidwell Street, Exeter, Devon EX4 6PH. ☎ 0392 37756.

Archaeology

Cambridgeshire Software House's *Archaeology* has been around for a couple of years and occasionally snippets of information about very exciting work using the program have reached us, eg Nottinghamshire

have produced a very interesting pack about Nottingham Castle which is available to schools within the County.

The only datafile known to us which is generally available is the one of Fishbourne from Barry Holmes, one of the authors of *Archaeology* (Send formatted disc plus 75p to Barry Holmes, St Helen's C.P. School, Bluntisham, Cambs.).

If you have produced a file using *Archaeology* and would be prepared to make it available to others – we are looking particularly for files on places of interest which might be visited by schools from another area while on extended educational visits and those that have used the program in a highly imaginative way – then please send us details. Depending on the response, we'll either publish a list of addresses with a brief synopsis or publish the best on Disk User.

Logo Resource Materials

Logotron have a number of Logo support materials available to provide ideas for teachers or parents.

The "Walsall Papers" cover Talking Turtles, Islamic Patterns, Playing Floor Turtle (Valiant and Jessop) and In Control with Logo. All are priced at £6.00 or £20.00 for the set. An audiotape with interviews with LEA advisers, teachers and Logotron staff is available for £3.80.

Details: ☎ 0223 323656.

Micros in the Classroom – in book form!

In an unreserved plug for Chris Drage and Nick Evans, writers for A&B Computing, I have the very great pleasure in informing you all of a new book the dynamic duo have written specifically for teachers.

Called **Teacher Friendly – A Guide to using Micros in the Classroom**, their 260 page book takes the experienced and the not so experienced through Microcomputer technology into the classroom – and when I say Microcomputer Technology, you can bet I mean the BBC Micro.

Written in good old plain English, this book shows you just how useful the Micro can be. There are reviews, comments, tips and even a list of 900 useful addresses. The book is available now.

Contact: Denis Blackmore, LDA, 32 Bridge Street, Cambridge, CB2 1UJ. ☎ (0223) 357744.

Egyptian Masters

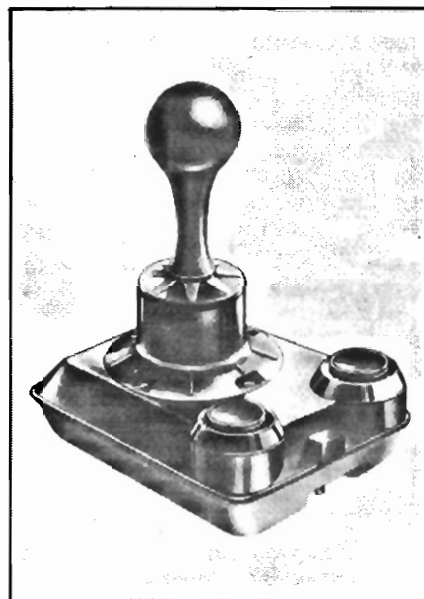
A pilot project to introduce computers into Egyptian schools has

resulted in the sale of 600 Master Series computers to the Egyptian Government education department.

To mark the start of the project the Rt Hon Kenneth Baker MP, visited Egypt and presented three Archimedes 440 micros to the minister and the universities of Cairo and Alexandria. The Overseas Development Administration in London has contributed substantial funds for British Council consultancy services to support the introduction of computers into Egyptian schools.

Floppy Fun

Games players – is there anyone who doesn't now and again? – in need of a joystick to get to grips with *Empire Strikes Back* or *Aviator* can now consider Compumart's *Micro Blaster*. The extra long 1.4 metre cable means more player positions (good for multi-player games like *Indoor Games* etc) and there's a 12 month guarantee. Price is £12.95 but you'll have to budget for an analogue to switched joystick converter too to use it on the Model B or Master 128. Have a word with your dealer.



Prizewinners!

Just room for a quick listing of some prizewinners:

System Wadgebury – Messrs Newsam & Newsam from Sheffield.

Hyperdriver Demo – Helen Louise Windsor from Camberley, David R Ross, Fareham, Brian Insole, Pontypridd, C.S. Buckley, Frodsham, G.L. Whiteford, Stirlingshire, W.M. Forrest, North Shields, E.A. Cook, Cwmbran, and Penny Patterson, Brentwood.

Orcrest Hi-Score – A. Barelds, Holland.

Well done all those people, prizes will be sent out ASAP.

DISCUSSION



Bouquets From a Superfont Fan

I write concerning the excellent Superfont suite of programs in Disk User, issue seven.

I have created one original font, and made some adjustments to the original one. Based on these are two other fonts, which contain the French accented letters, I have also tied the programs together with a menu.

Although the work was not difficult, it was rather tedious. If you feel that it would benefit other Disk User readers, then I'd be happy to send you a copy of it.

I'd also like to thank Disk User, (and the program author) for an excellent program. Because of the interest I've found in it I've hardly looked at *Tracery* yet!

Brian E Lowe, London.

We will pass on the Compliment to Dov Rosner in Israel. Dov is indeed a fine programmer, and he's always got something new in the pipeline, see Ape this issue.

*Incidentally we always say "send it in" when asked by readers if we think it worthwhile to look at their efforts. You would be surprised how many people are hiding their light under a bushel, or at least their programs anyway. At the very worst you can expect your work returned with a polite note, and something like a new Superfont font is always an inspiration to other readers. Indeed it is the readers who make the magazine what it is, and enable us to keep the standard of software so high. Because in Disk User, we believe that we have created a disk magazine with the **BEST** software to be found in any computer mag in the UK, full stop.*

There is so much good stuff coming in we are struggling to get it all on the disk, and we may have to start a new line in Disk User Software

dec hex kbd dec hex kbd dec hex kbd dec hex kbd

128 &80	A	129 &81	e	130 &82	æ	131 &83	é
132 &84	ë	133 &85	i	134 &86	ö	135 &87	ï
136 &88	ü	137 &89	ç	138 &8A	¸	139 &8B	¸
140 &8C	ü	141 &8D	¸	142 &8E	¸	143 &8F	¸
144 &90	¸	145 &91	¸	146 &92	¸	147 &93	¸
148 &94	x	149 &95	±	150 &96	¸	151 &97	=
152 &98	¸	153 &99	α	154 &9A	¸	155 &9B	¸
156 &9C	¸	157 &9D	Ω	158 &9E	¸	159 &9F	¸
160 &A0	¸	161 &A1	! ¸	162 &A2	" ¸	163 &A3	# ¸
164 &A4	\$ ¸	165 &A5	% ¸	166 &A6	& ¸	167 &A7	' ¸
168 &A8	(¸	169 &A9) ¸	170 &AA	* ¸	171 &AB	+ ¸
172 &AC	, ¸	173 &AD	- ¸	174 &AE	. ¸	175 &AF	/ ¸
176 &B0	0 ¸	177 &B1	1 ¸	178 &B2	2 ¸	179 &B3	3 ¸
180 &B4	4 ¸	181 &B5	5 ¸	182 &B6	6 ¸	183 &B7	7 ¸
184 &B8	8 ¸	185 &B9	9 ¸	186 &BA	: ¸	187 &BB	; ¸
188 &BC	< ¸	189 &BD	= ¸	190 &BE	> ¸	191 &BF	? ¸
192 &C0	@ ¸	193 &C1	A ¸	194 &C2	B ¸	195 &C3	C ¸
196 &C4	D ¸	197 &C5	E ¸	198 &C6	F ¸	199 &C7	G ¸
200 &C8	H ¸	201 &C9	I ¸	202 &CA	J ¸	203 &CB	K ¸
204 &CC	L ¸	205 &CD	M ¸	206 &CE	N ¸	207 &CF	O ¸
208 &D0	P ¸	209 &D1	Q ¸	210 &D2	R ¸	211 &D3	S ¸
212 &D4	T ¸	213 &D5	U ¸	214 &D6	V ¸	215 &D7	W ¸
216 &D8	X ¸	217 &D9	Y ¸	218 &DA	Z ¸	219 &DB	[¸
220 &DC	\ ¸	221 &DD] ¸	222 &DE	^ ¸	223 &DF	_ ¸
224 &E0	` ¸	225 &E1	a ¸	226 &E2	b ¸	227 &E3	c ¸
228 &E4	d ¸	229 &E5	e ¸	230 &E6	f ¸	231 &E7	g ¸
232 &E8	h ¸	233 &E9	i ¸	234 &EA	j ¸	235 &EB	k ¸
236 &EC	l ¸	237 &ED	m ¸	238 &EE	n ¸	239 &EF	o ¸
240 &F0	p ¸	241 &F1	q ¸	242 &F2	r ¸	243 &F3	s ¸
244 &F4	t ¸	245 &F5	u ¸	246 &F6	v ¸	247 &F7	w ¸
248 &F8	x ¸	249 &F9	y ¸	250 &FA	z ¸	251 &FB	{ ¸
252 &FC	¸	253 &FD	} ¸	254 &FE	~ ¸	255 &FF	+ ¸

All french characters on 'A VOUS LA FRANCE' f8 - f8 (lower case) function-key strip are available on the shifted 1 - 9 black keys. (e.g. ! gives à).

The following characters A, E and Ç can be obtained from +, # and > keys respectively.

The ç character is obtainable from C.

The other french keystrip characters (i.e. shift f8 - f9) are obtainable from characters 128 onwards. These are not available from the keyboard but may be entered (e.g.) 'æ' as CH129 space.

Most of the characters replaced by the french ones can be found elsewhere, e.g. ! is available as CH254 space.

Il vous suffit d'avoir toujours avec vous votre carte et de connaître votre code secret.

Les distributeurs automatiques de billets sont faciles à identifier grâce à l'autocollant carte familier, bleu-blanc-ocre.

Si vous ne connaissez pas votre numéro de code secret, consultez l'agence bancaire qui a délivré votre carte.

for those BIG programs. I can hardly keep it to myself, but I can reveal new Superfont developments for starters!

Textshape Teething Troubles

In the current issue of *Disk User* the Wordprocessor by Peter Scott does not appear to work beyond the first page, ie line 65. Any attempt to venture past this point is repulsed by the system with a "disabled program" notice, and an indication that there is a **BAD SUM ON CHANNEL 170**.

Aa a newcomer to personal computing I wonder whether these bugs and errors are placed deliberately so that we can learn a little more about the many splendoured facets of programming, and operating applications!

Could you please offer some help to overcome what is obviously a temporary hiatus. You may also be interested to know that I learned a lot about **LOCKED** files while trying to follow your instructions for this same program. I eventually got the !BOOT in, only to be !BOOTed out again at line 65.

My frustrations were compounded by the accompanying centre-page pull-out manual. This too seems to suffer from a loss of words at the page break points. Only pages four

and five are in sequence, the rest, well?. This is the stuff DTP's are made of, presumably?

Commander T G Maltby RN

'Many splendoured facets'? I think you must want Jewel Thief Quarterly, or something. Seriously though, I can state unequivocally that there is nothing wrong either with Textshape, or your computer. Just a nasty case of what we computer hacks call **In-compatibility**, or what they don't tell you when they sell you a computer.

To explain more fully I should give bit of history about the BEEB. When the machine first came out it had no disk interface. Then Acorn brought out it's own interface, which was frankly, disappointing. Slow, limited and very expensive. Other companies thought they could do better, and did so. this resulted in many different Disk Interfaces, all pretending to be identical to the original, but with more features. As time went on technology changed and a new chip was introduced, the 1770 DFS was born. This was better, it allowed more features, and was cheaper. It was also different to the original. Acorn introduced their own version, so did other companies. All were slightly different, but all were trying to pretend to be that original chip, the 8271, but with added extras, double density for instance. Some

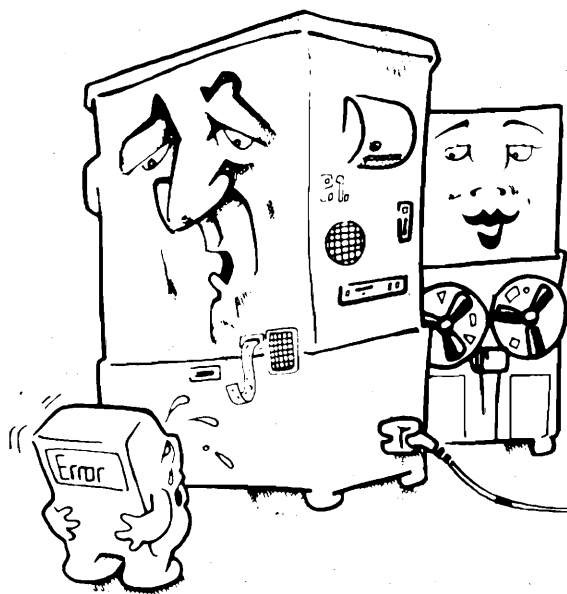
went too far, and made chips that, although better featured were no longer **fully compatible** with the **standard**.

This brings us up to date, and I would guess that you have a computer with one of these non-standard interfaces, probably the Watford one as it is known to be incompatible with Textshape (and other programs).

Why? I hear you ask. Well the answer is both simple, and obscure. Simple because whoever programmed the chip used has skimped on it, and so certain commands issued by the computer no longer work correctly with it. Obscure because there is no easy solution other than a complete rewrite of the program, or a new Interface chip.

I hope all this long explanation has at least been partially enlightening, but it just goes to show that you **never** stop learning about computers. As for the manual for Textshape, well the less said about that the better, but it wasn't DTP!

Well that's all for this month, rather brief but then we have had a postal strike on at *Disk User* Towers here in Peterborough for the last ten days, so none of our mail is getting through to us. Never mind! Keep on writing, we'll get round to looking at your pearls of wisdom sooner or later.



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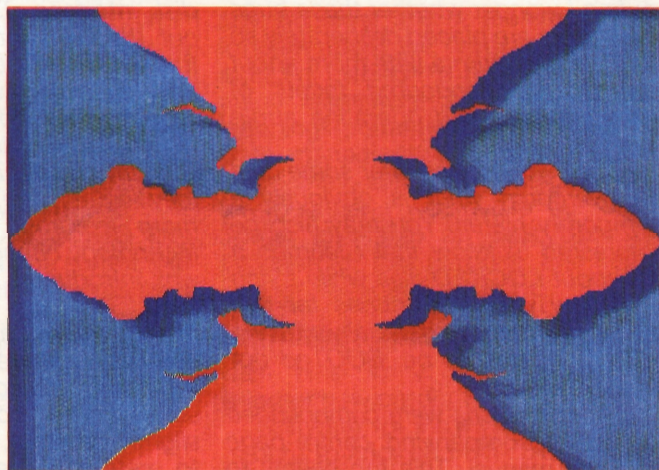
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brain-power of a
Haddock...

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GETTING INTO PRINT

Combine computer graphics with traditional techniques for stunning results



Ever since my time at Art School, more than twenty years ago, I've been interested in printmaking. Then, lightyears before the birth of the PC, *screen printing* meant 'silkscreen' or 'photographic silkscreen' printing a kind of stencilling without tie-bars, and something completely different from today's meaning.

In traditional silkscreen printing, loosely woven material is stretched over a frame, then parts of this 'screen' are masked and colour is thinly squeegeed along its length. Unmasked bits allow colour through this sieve onto the paper beneath.

Several colours can be printed onto one sheet of paper by giving each colour its own screen image. It's widely used in the printing industry as well as by artists because it is easy to understand, enables an

image to be created and repeated quickly, and is relatively cheap.

Masks

I've developed a technique that echoes silkscreen printing. I use a BBC computer to help me create 'masks', and to print these using sheets of coloured carbon paper. Image-information is kept as *electronic* screens a kind of visual databank on disk.

Each picture is built-up piecemeal from three screens. The screens are made by deleting and saving bits from the original screen to make three separate screens, and assigning a colour to each. I've used black, blue, and red. (I can't get yellow. Can anyone suggest a supplier?) Finally, with the paper and carbon

carefully aligned, each screen is printed using a standard dot matrix printer. Removing the ribbon saves expensive ribbon and gives a sharper image. Even if it doesn't inspire you to get into graphics, it is nevertheless, a cheap means of printing in colour.

Collecting the original screens takes time and patience. I find the best way of doing this is by grabbing frames using a digitiser. This little baby converts a video signal (from VCR machine or camera) into numbers. A digitised frame is a simple numerical representation, a kind of painting by numbers of what you see on the screen. With this plugged into my VCR, I'm able to 'grab' loads of visually interesting tv-type images. Or, connected to a video camera, I can digitise any photograph from my



extensive collection.

I've made a selection of frames some of which are on this month's disk. But if you don't have this equipment, try the shape-drawing routines to create a printable picture.

Cleaning up

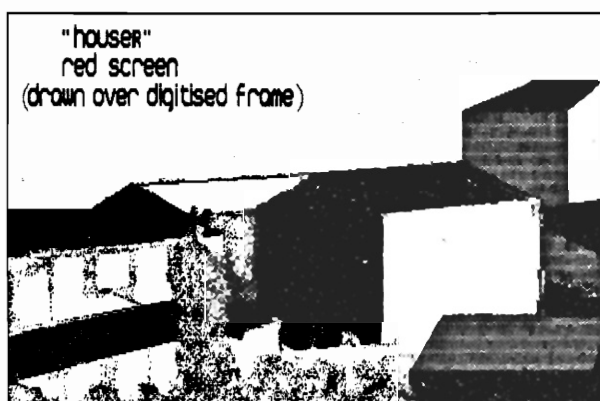
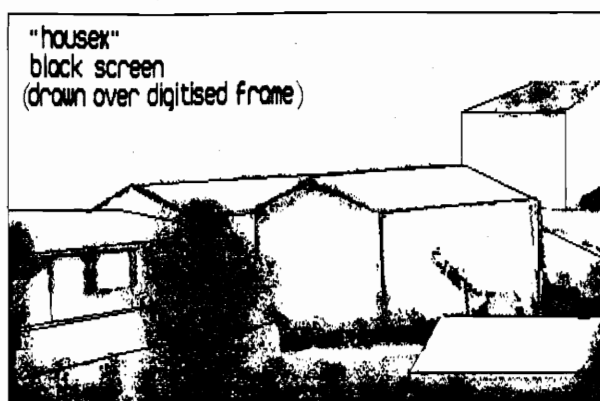
Part of the disadvantage of digitisers is they don't really give you a good enough image, not for any serious scientific or practical DTP work. But as a creative tool (one amongst many in the school artroom) they open up a wide range of printmaking possibilities. Part of the *art* lies in 'cleaning'. That is, deciding what to remove and the best way of removing it.

Some frames demand too much time or are very tedious to tart up because there's just too much to remove and manipulate in order to get something useable. Clearly, the initial image must have some aesthetic qualities, compositional features, beauty (call it what you will – a certain something!) et al in order to qualify as a candidate for cleaning.

If the image isn't sufficiently striking visually to be of use, then save your effort. But don't destroy frames just because they look cluttered or noisy. Sometimes just shrinking and cropping an image improves definition. And it is always worth treating the frame to a few processes, like smoothing and edge detection to get interesting or unusual results. Also, most frames have some small bit worth saving. It is surprising how many little bits of otherwise useless frames can be usefully saved as cut-outs for future publishing projects.

The method

Decide what you want to keep. If the frame is visually simple and the



unwanted bits are grouped together and easy to get at, then the best method is to define a window around the areas you want to lose, and use the clear-window option. You'll need a fairly steady hand removing background rubbish with the 'rubber'. You can minimise mistakes by constantly *saving* your masks at various stages and using speckled white spray. This gives soft edges. Also, bear in mind that final frames will still need *cosmetic* afterwork with the pixel editor.

Save the *cleaned* frame as your 'master' and make the black, blue, and red. screens from this. I usually make the black screen first, and save this with the filename suffix 'X'. Then I reload the 'master' and make the 'red' screen by deleting those bits I don't want printed red, and save with the suffix 'R' for "red". Finally, I reload the master screen again and make the blue, saving with suffix 'B' for "blue".

This is the bit which can't be taught, so from now on in, you're on your own! This is the *creative* bit and it can be the tedious bit, too. You need to have a fairly clear idea of what you're going to do with the final frame to justify time taken grabbing and cleaning, leave along manipulating.

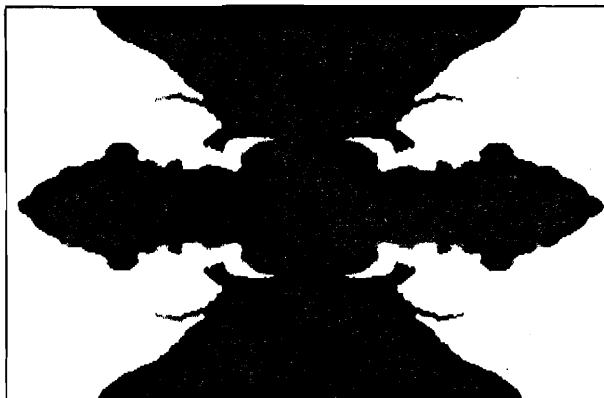
When each frame and carbon is ready for printing, align both accurately in the printer using the ruler and guide bars, and print! For near-perfect alignment, draw cross-hairs at the top of the page, begin dumping but take the printer off-line at the end of each pass of the printhead to check printing alignment and make small careful adjustments.

Screens

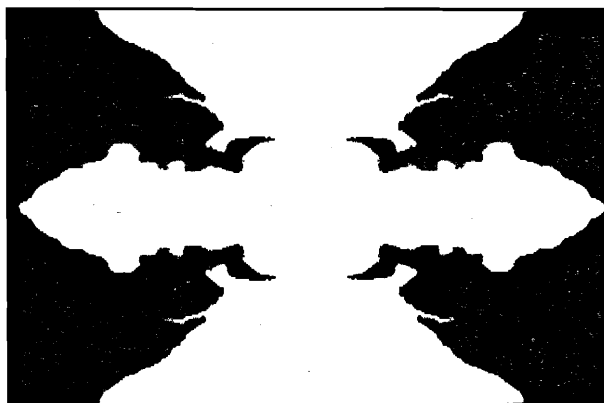
In order to be successful with colour separation techniques using a computer, you need to be able to think about a frame as if it were composed of four transparent screens. The advantage of carbon paper is you can go on using it. It loses colour quickly, so you can use this to give progressively paler prints, make subtle steps in colour saturation, or to add additional *patterns*.

In fact, the illustrations with this article demonstrate a number of different techniques. Some frames show how colours can be mixed to create new ones 'Mask' and 'House' are two examples. Others show strong visual rhythms already built-in. 'Hand' (my son's, skipping the keyboard) contrasts positive and negative spaces and leant itself to 'the treatment' (edge-detection).

What this process does is scan the image from top to bottom looking for boundaries or edges between different patterns or colours. When a boundary is detected it is converted into a line. Colour is drained from the



above, "rain" yorkshire tv weather map
below "rain"



frame so you're left with a white line drawing on black. Invert (turn white to black and vice-versa) and save as a line drawing.

The line drawing is suitable as the black screen. It can also be used to create the red and blue screens by filling selected bits of the image with black. further experimentation can lead to more complicated colour mixing. Also you don't need to use a new sheet of carbon everytime you make a new print. Some images need added texture or subtle patterning.

Experimentation may lead to other ideas and effects. Printing onto coloured paper or using crayons and tracing papers are two ways of getting yellow and green into the picture. Printing onto papers with different textured surfaces increases the creative possibilities still further.

Image manipulation doesn't have to lead to a recognisable graphic. In fact many frames have hidden patterns possibilities worth exploiting. Yorkshire television's local weather map is a good example. I inverted and *smoothed* the image first in order to get a better coastline edge to the map. This is best done with a program which averages out the colours or patterns in the frame. It works by looking for small, differently coloured or patterned areas inside large expanses of another colour or pattern, and changing these so they

match in with the larger expanse.

Generally, this has the effect of deleting odd blemishes or random bits of unwanted debris from the frame and giving it a softer finish. Shrunk to a quarter size, it makes a good *repeatable* for flipping and twisting into masks.

Doing silk screen printing with a computer, DTP and digitizer encourages exploration of compositional elements, colour and form in a more open-ended way than traditional silk screen might allow. Images can be re-arranged, altered or otherwise manipulated on your screen canvas easily and dumped in colour. Have a go! Art is relaxing, as well.

TRANSFER

Taking your disk files one step further

```
*cat
MUSIC-MAKER (34) FM
Drive 0                      Option 3 (EXEC)
Dir. :0.$                    Lib. :0.$

      !BOOT                      EDITOR
      EXPAND      L              MENU
      PRESENT
      SETCOL                      SCREEN
                                   UTILS

      1.DEMO                      2.DEMO
      3.DEMO                      X.MUSIC      L
>
```

Disk User programs can be so useful that you'll often want to transfer them to their own disks and use them separately, without title page or menu. To do this successfully you'll need to learn a little about BBC BASIC and the DFS (Disk Filing System). In Disk User we don't believe in referring you to the manuals to here's an explanation of how such a transfer can be achieved.

Let's take the *Music Maker* program as an example this month. The relevant file on Disk User is:

X.MUSIC

Make sure you have a blank data disk ready to receive the file. Insert Disk User and type

***COPY 00 X.MUSIC**

and press the <RETURN> key.

Follow the keypress prompts on the screen until the > prompt returns. Now type

***COPY 00 EXPAND**

and press the <RETURN> key. Follow the prompts.

Because X.MUSIC is a compressed file special to Disk User the first thing to do with your new disk is to type

CHAIN "EXPAND"

and to choose the option for Music Editor. The program will now expand out the separate programs which make up the package (be patient!). When it has finished expanding it will *Catalogue* the disk to confirm that the expansion has proceeded properly

Give it a title

You can now type

***TITLE MUSIC-MAKER**

and press the <RETURN> key. Now type

***CAT**

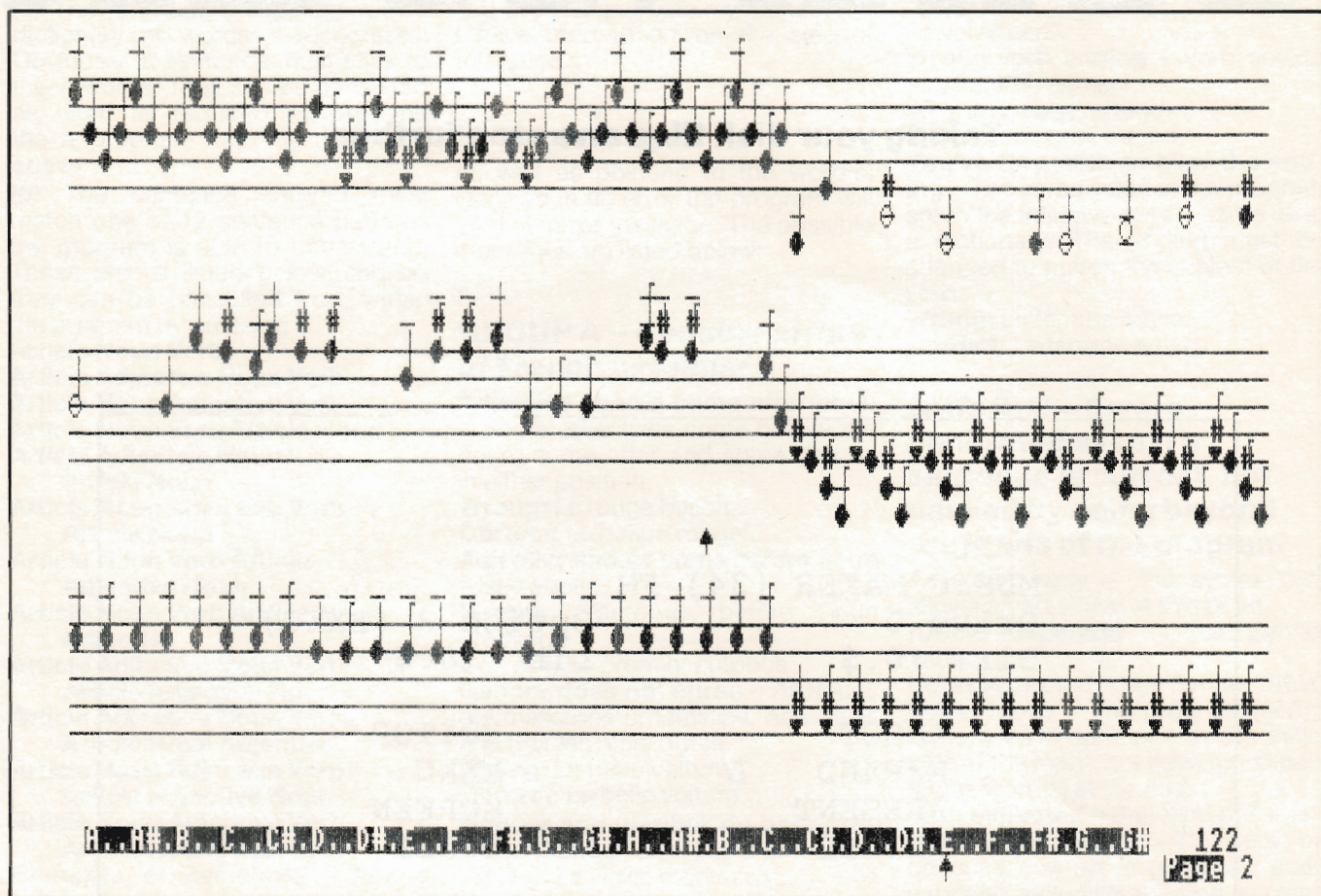
and press the <RETURN> key and the screen will display the title plus the files listed in Figure One. EXPAND and X.MUSIC can now be deleted. The !BOOT file works with option 3 so type:

***OPT 43**

and wait for the disk to stop whirring. You can now activate Music Maker with the SHIFT/BREAK combination.

Details on transfer are also given on screen when you select Music Maker from the Disk User menu.

MUSIC MAKER



Music Maker is a program for the BBC Microcomputer which allows the user (with a basic understanding of music notation) to:-

- compose his/her own music
- play-back the music
- edit the music
- save the music to disk
- load a previously saved piece of music from disk

Music Editor gives access to the three sound channels of the BBC, and has the capacity to store 360 crotchet beats (120 per channel), each channel having a range of 23 semitones for each note.

Also included in the package is a *Utilities* program and a *Presentation* program.

The *Utilities* program contains three useful sub-programmes. These allow the user to:-

- Swap two specified channels of a piece of music
- Transpose (ie change the key of) a channel of a piece of music
- Check the chords of a piece of music

In each of the above cases the music used must first have been saved on disk.

The *Presentation* program allows the user to 'show off' up to six of his/

her compositions. There is also the option to display a Mode 7 screen with each piece of music. (Mode 7 screens are saved to disk by using the command ***SAVE screen 7000 7FFF**).

Operating Instructions Music Maker

Cursor keys: These keys move the pointer (a small arrow head) up, down, left and right. The pointer indicates the channel and the position in that channel. The number at the bottom right-hand corner of the screen shows the horizontal coordinate of the pointer (0-79 for page one, but 80-159 for page 2 and 160-239 for page 3). Each value represents a length of half a beat. This number can be used, for example, to check that the pointer is positioned at the beginning of a bar (if there are 4 crotchet beats to each bar and bar 1 starts at position 0, subsequent bars will begin at positions 8, 16, 24, 36... etc).

Space: When the pointer has been moved to the desired position, press <SPACE> and you will be

asked to specify the length of note to be placed in that position.

Q stands for quaver (= .5 beats)

C stands for crotchet (= 1 beat)

M stands for minim (= 2 beats)

S stands for semibreve
(= 4 beats)

You will then be asked to select the pitch of the note, ranging from bottom A to top G sharp. Move the new pointer along with the left and right cursor keys and press <SPACE> when underneath the desired pitch. The note will then be displayed on whichever stave the original pointer was on when space was pressed. The original pointer is moved on right to a position where the next note can be entered (eg if the note entered was a crotchet this takes up two character positions on the stave so the pointer is moved two places right).

1/2/3: Pressing either 1, 2 or 3 selects the page you want to work on. Each page has the capacity to store 40 crotchet beats per channel since each horizontal character position (in Mode 0) represents the length of a quaver ie 2 horizontal character positions per crotchet. If a note is entered and

crosses the border between one page and another (eg semiquaver at position 78) you are automatically presented with the next page when the pointer is moved on.

D: To delete a note, the pointer must be underneath that note and when asked for the length of note to delete that length must correspond with the length of the note above the pointer. If the length you enter exceeds the length of that note (eg 'M' when the note is a 'C') the note will not be deleted. If the length you enter is less than the length of that note (eg 'Q' when the note is a 'S') part of the note will be deleted but it will appear as if all of it has been deleted – only when the page is selected again will the remaining part of the note show up. The same is true when 'D' is pressed but the pointer is not directly under the note. If you are not sure that you have deleted a note properly, just re-select the page number and any fragments of notes which have been unsuccessfully deleted will be exposed.

S: Pressing this will re-enter the previous note after the pointer has been moved on. (eg if you want a note lasting 8 crotchets beats, enter a semibreve note. Then press 'S' and this note will be printed again but in the next position, since the pointer has been automatically moved on). However, if the previous note has crossed the border between one page and another, only the part of the note which is displayed on the next page will be re-entered.

P: Plays the music you have written. Channel 1 is sounded an octave higher than channel 2 which is sounded an octave higher than channel 3. The speed cannot be changed during execution of the program, but the SOUND command can be found at line 48 of *Editor*, if you want to change it manually.

T: Terminates play-back of music – useful if you have only written a page or so of music, because the computer is programmed to play right through to the end of page 3 – a waste of time if you haven't anything there!

L and W: Load and Write music from/to disk. Fairly self-explanatory really. You have the option to load/save either one particular channel or all the channels. If you just need to edit one channel of a piece of music it is quicker to load and save just that channel instead of all of them. If you lock your music files (on directories 1/2/3) and find that they have all been accessed after using the editor, don't worry – every time W is

pressed, all the music files are accessed, before writing music to the disk. If the filename chosen is identical to another on the disk the music is still saved, whereas if that file had been locked, there would have been an error which would have resulted in the re-execution of the program (due to the ON ERROR command), thus losing all the previous edits.

Utilities

Swap Channels: This option allows the user to swap two channels of a piece of music. It simply swaps their directories, so that, for example, if you choose to swap channels 1 and 3, and the filename is 'tune' then 1.tune becomes 3.tune and 3.tune becomes 1.tune. The effect of this might be the melody being played 2 octaves below the bass part!

Transpose Channel: This option allows the user to change the key of a channel of a piece of music. For instance, if the key was C major and you wanted to convert this to D major, you would transpose the channel up by 2 semitones (C-C#-D).

Note: You can transpose the channel up or down a maximum of 13 semitones, but single digit numbers must be entered as if they were two digit numbers eg 2 would be entered as '02'.

Check Chords: This option, unique to Music Maker, checks the validity of the chords within a specified piece of music on disk. It can handle major and minor chords of any key. If you try 'Chord Checker' on the demo tune provided on the

disk, you will find that it finds quite a few 'bad' chords, although the demo sounds perfectly alright, and thus you must only use 'Chord Checker' as a rough guide to spot possible errors in your harmony.

Note: Printer required.

In each of the above sub-programs, a high pitched bleep indicates a successful operation, whereas a low pitched bleep indicates an error.

Presentation

This was the last program in the package that I wrote. It allows the user to:-

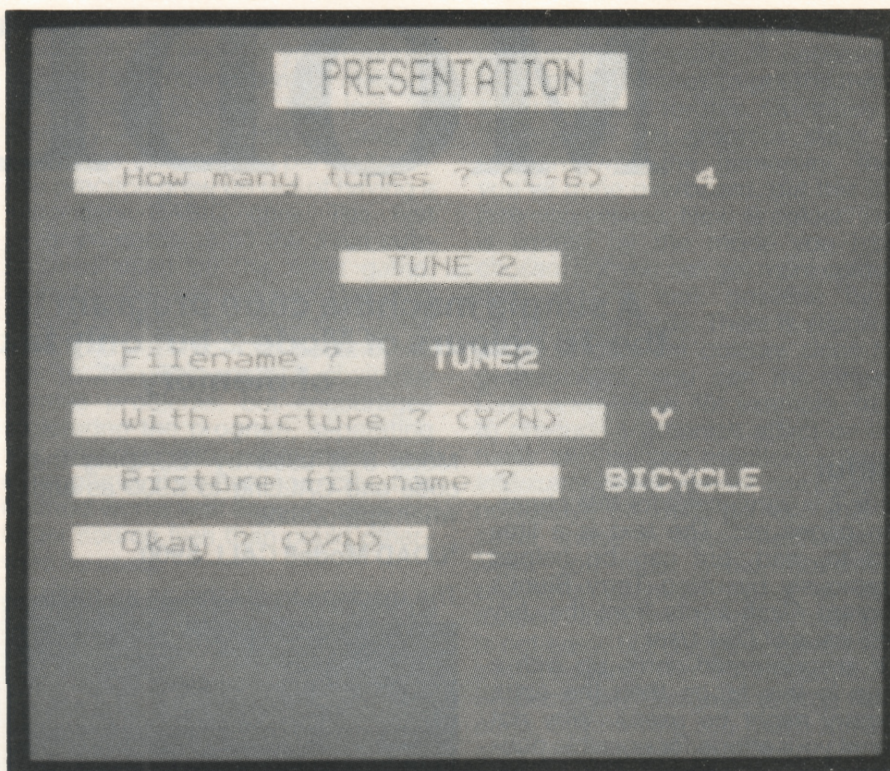
(a) Load up to six pieces of music from disk.

(b) Display a picture with each piece during play-back.

Just follow the instructions that appear on the screen and you shouldn't have any problems.

To shorten the delay between each piece of music, all the music is loaded up in a batch before the start of the presentation. The disadvantage of this was that I had to use a large array which limited the display to Mode 7 and only six pieces for each presentation, as I was short on memory.

Note: The Mode 7 screens however, are not loaded up in batch so an invalid screen filename will result in an error and re-execution of the program during the actual presentation – which is embarrassing if you are showing off your latest masterpieces! – so make sure you know the exact filenames of your screens before running the program.



MODE 8

A simple machine code program to give you the 16 colours of Mode 2 but only taking up 10k of memory

Useful

Mode 8 is very useful for title pages, help pages etc. The text is a little hard to read, but can be helped enormously by using Terry Blunt's program *Flash Fonts* from the July 1988 issue of *Disk User*.

If anyone could come up with a game in this Mode then the extra memory might be useful. Why not submit your efforts for possible publication?

Electron

This program will work on the Electron, albeit without the Mode 7 instruction page.

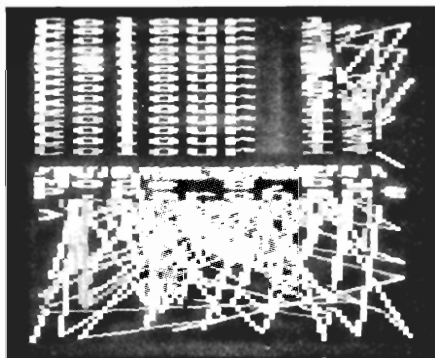
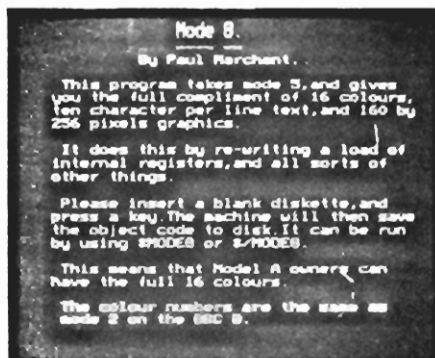
Mode 8 is used by *LOADing the code and CALLing to &900 as and when appropriate:

***LOAD Mode8 CALL &900**

The machine treats this as an ordin-

ary Mode change so it resets the cursor on/off.

The actual object file loads in at &900 and, although the useful part is only about 60 odd bytes long, it is saved as 256 bytes for convenience.



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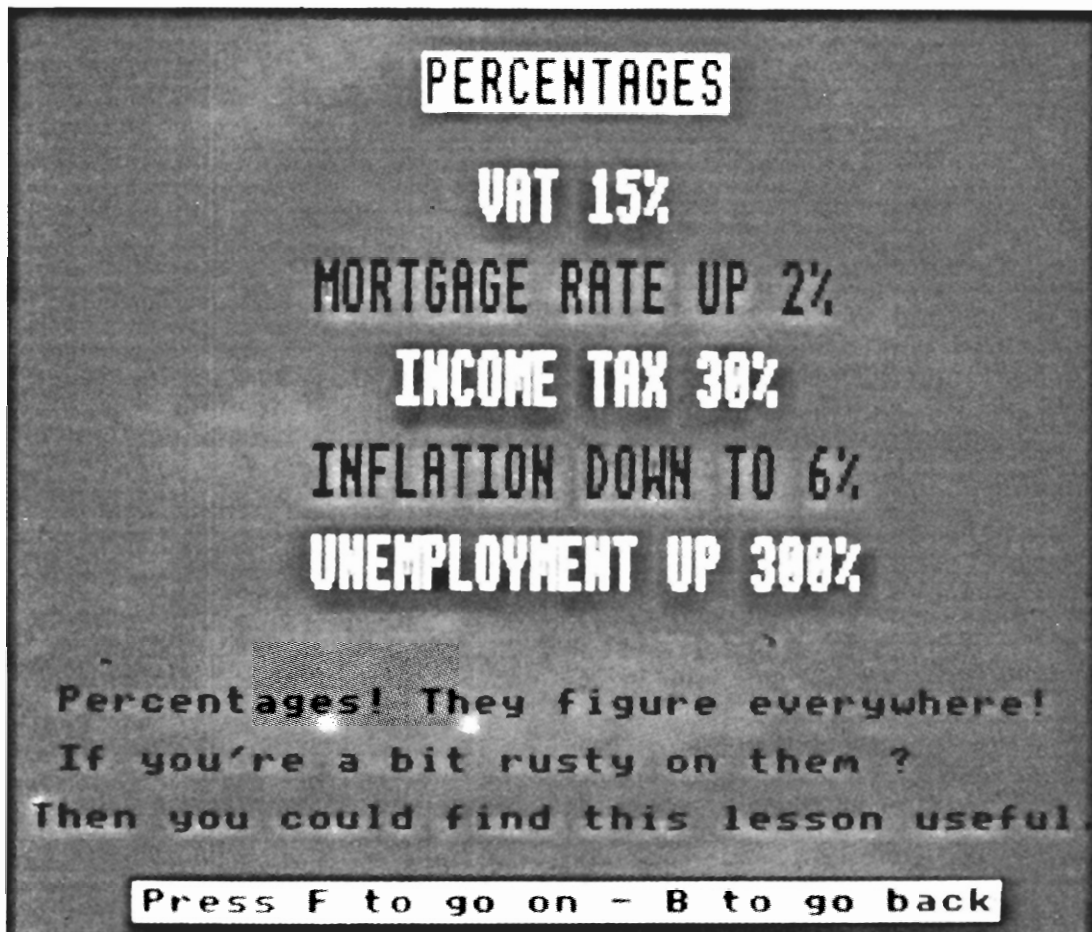
Archive and partload disk utilities listed

**A&B COMPUTING NOVEMBER ISSUE
WITH FREE FLEXIDISC ON COMPUTER MUSIC
WITH THE BBC MICRO**



CALFORM

A structured approach to developing Computer Assisted Learning lessons



Having spent a lifetime in technical training I became convinced of the need for *instruction* to be properly designed. By *instruction*, I mean any activity to promote learning. Having a BBC micro, and time to spare, CAL (Computer Assisted Learning) seemed to be a useful area in which to ride my favourite hobby horse. However I found the programming required to produce worthwhile CAL lessons very time consuming. In fact a lot of the programming is general to all CAL lessons, and could be provided in a standard format, leaving only the particular content of a lesson to be programmed.

Experience with high level authoring languages on minis and main

frames had taught me that these could be constrictive. In attempting to cater for authors with no programming skill, they often tend to put the author into a straitjacket. My objective was to provide a format which an author familiar with programming in BBC BASIC would find useful and yet not at all constricting. The outcome was CALFORM. The programs on this month's disk are related to this article.



**Brush Up On Percentages
Introducing CALFORM**

Brush Up On Percentages (file

name - percent) is a CAL lesson which was primarily used as a test bed for the development of CALFORM. If you haven't already done so, I suggest you take a look and see the sort of things that can be done within CALFORM.

The second program 'Introducing CALFORM' (filename - CALFORM) is intended to be a structured shell into which authors can put their own content. However, as an introduction, I have put in a little content to demonstrate the rudiments of the basic format. It would be a good idea to take a look at this point.

In this article and the programmes on disk I hope to show that the structured approach of CALFORM

does not put the CAL author in a rigid straitjacket. Rather than the CAL author who has some familiarity with BASIC Programming can develop an initial idea with CALFORM using its flexibility for continuous adjustment in response to feedback. Feedback that comes initially from the author's own reactions during development and then later from try-outs with typical learners.

THE MODULE

CALFORM is designed to use *modules* of instruction. A module can correspond to a lesson, though a lesson, if need be, can consist of more than one module. The module consists of up to 8 segments. See Fig. 1

Fewer or more than eight segments can be used but line numbering makes up to eight most convenient. I use structure diagrams to show the level and flow of control within a module. I find these more useful than conventional flowcharts. You can start thinking and designing in general terms at the highest level and then progress downwards into more detail. See Fig. 2 for the first level of a module.

The line of boxes at the first level, reading from left to right, corresponds to the main programme. The diagonal lines indicate only that they belong to the module.

Each segment is called from the main program as a procedure (PROCseg) which presents the learning material. At the end of each segment the learner has the choice of either going on to the next segment or going back to the previous one. This control by the learner is provided by an end of segment procedure (PROCsegend). The main module program in outline, corresponding to the horizontal line of boxes in Fig. 2 is

```
10 REM Cal Lesson
20 REM By Cal Author
30 REM © 1988
40 MODE1:*TV0,1
50 VDU19,2,4,0,0,0
60 etc.,
lines 10 to 90 for initialisation etc.,
90
100 PROCseg1:PROCsegend
110 CLS:GOTOnextseg
up to 8 segments for presentation of
learning material
800 PROCseg8:PROCsegend
810 CLS:GOTOnextseg
900 END etc.,
1000 DEFPROCseg1
procedures from here on
```

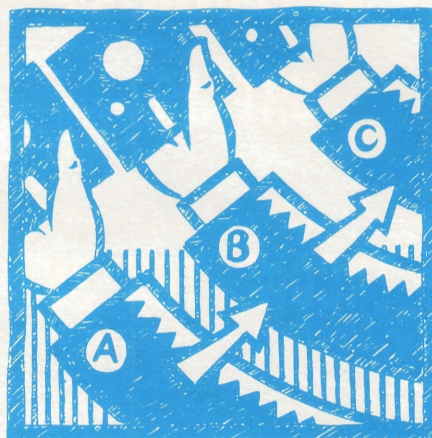
You will note that lines 10 to 90 are used for initialisation, lines 100 to 800 for calls to the Segments and the main program ends at line 900.

THE SEGMENT

The segment is a self contained sub-module and is the next level down in

The program at the segment level presents learning material and itself calls general support procedures such as PROCspace, PROCquestion and PROCresult, as well as one-off procedures like PROCcounter in the tutorial on binary.

At the end of a segment, ENDPROC causes a return to the main program (See Fig.2). Normally a procedure PROCsegend is called at this point. This procedure displays the message "Press F to go on - B to go back" at the bottom of the screen. Assuming a learner has just completed Segment 3 and B is pressed, the program steps back to the overall structure. See Fig. 3



The diagram convention shows a complete separation between the call to a procedure and the procedure itself. Structurally the segment program will operate at the second level whenever it is called. The diagram for the first level of the segment procedure (second in the overall structure) is shown in Fig. 4. Segment 2. This allows the learner to go backwards and forwards like turning the pages of a book.

The procedure PROCspace when called displays the message "Press SPACEBAR to go on". With this procedure and the previous one the author can build into the lesson the degree of learner control desired.

There is an advantage in having a numerical relationship between segment number and BASIC line number. We have already seen that segment 1 is called from line 100, segment 2 from line 200 and so on. This relationship is continued by locating the procedure PROCseg1 at line 1000, PROCseg2 at 2000 and so on. This might seem wasteful in line numbers but there are plenty available. It does mean that a particular part of a lesson can be easily found. And it allows ample space if the material in a segment grows during development.

The line number allocation, in outline, for the segments of CALFORM is shown below -

```
1000 DEF PROCseg1
```

```
1010 seg = 1
```

```
1020 COLOUR 0
```

```
1030 etc.,
```

```
Seg 1 learning material
```

```
1??? ENDPROC
```

```
2000 DEF PROCseg2
```

```
learning material
```

```
3000 DEF PROCseg3
```

```
learning material
```

```
and so on up to 8 segments
```

```
8000 DEF PROCseg8
```

The best way to appreciate the usefulness of CALFORM is to see how it is used. Load CALFORM from this month's disk. It is not quite an empty shell, as previously noted. You may like to RUN it to remind you of what's in it. If you LIST the program we shall be able to usefully examine some of the features of CALFORM.

First of all examine lines 10 to 90

```
40 Mode 1:*TV0
```

```
50 VDU 19,2,4,0,0,0
```

```
60 VDU 19,3,6,0,0,0
```

```
70 COLOUR130:CLS
```

```
80 VDU 23,1,0,0,0,0:*FX11,0
```

Mode 1 is chosen as the best compromise providing 4 colours, good resolution (320 x 256) and acceptable text (40 cols - 32 lines). *TV0 turns off the interlace to give a steadier display.

The VDU 19 statements in lines 50 and 60 change the colours yellow to blue, and black and white to cyan. This makes blue, black, red and cyan available.

COLOUR130:CLS in line 70 switches the background colour to blue which I think works well with foreground colours cyan, black and red available for text and graphics.

VDU23 in line 80 turns off the cursor to avoid its distracting effect and *FX11,0 cancels the auto keyboard repeat.

Of course this initialisation can be changed to meet your wishes and needs for particular applications.

Now look at lines 100 to 800. For example line 100 is -

```
PROCseg1:PROCsegend:CLS:
```

```
GOTOnextseg
```

and the other lines will be identical, except for the segment number. This is the main program which ends at line 900 with the statement END.

After the presentation of each segment of learning material, the procedure PROCsegend gives the student the choice of going on or going back. A variable *nextseg* is incremented or decremented by the choice made. Hence after clearing the screen by CLS the GOTO statement moves the learner back or forwards.

The use of GOTO statements, and calculated GOTO statements at that, may seem to be going against the holy writ of structured programming. It seemed to me, however, that the clearly defined pattern in which they are used, guards against

Fig 1

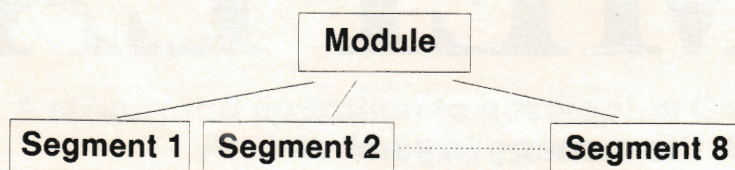


Fig 2

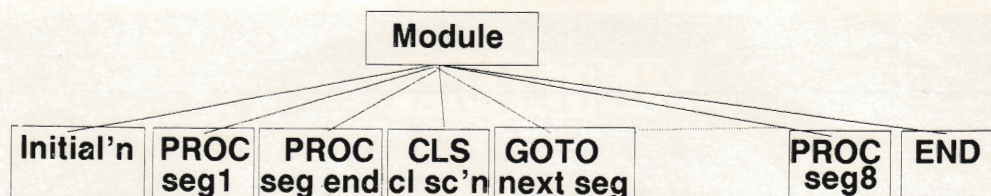


Fig 3

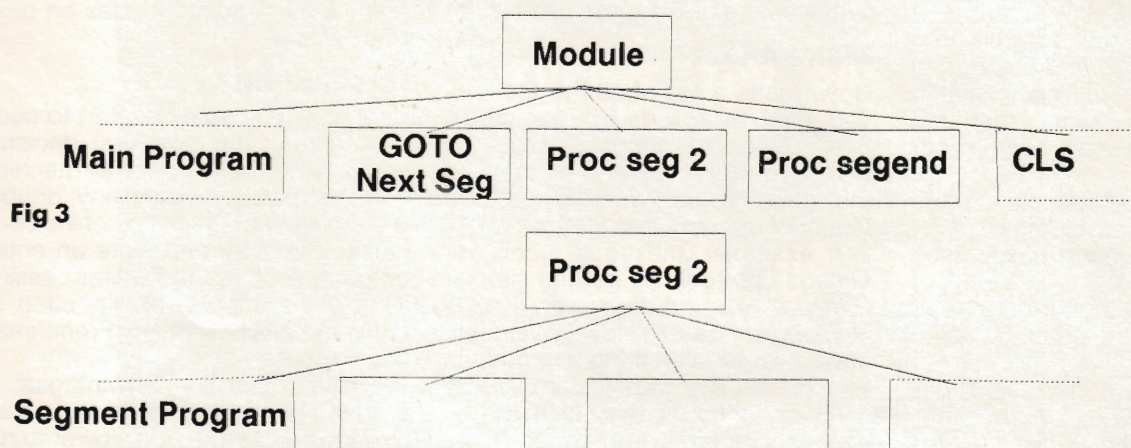
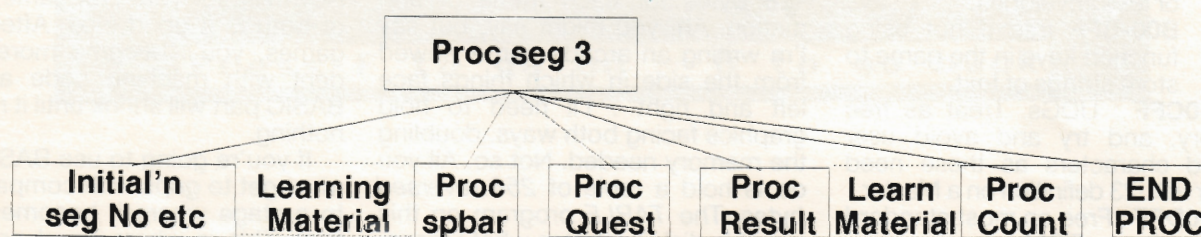


Fig 4



any spaghetti-like development. Providing the segments are maintained as self-contained as possible then no great problems arise. Lines 1000, 2000 and following define PROCseg1, PROCseg2 and so on. The content of each segment is what is presented to the learner. This can be stimulus material like my rather simplistic introduction to CALFORM. Or it can be as complex as needed, using calls to procedures provided by the author. *A good source of procedures is that provided by our own*

Procedure Library Manager.

The remainder of the program is devoted to a number of general support procedures. Starting with PROCsegend at line 10000 through to PROCbigtext at line 12000, they are procedures likely to be used in any CAL lesson. Procedures needed for specific lessons can be added after these.

The flexibility and adaptability of CALFORM is, I think, more valuable than the detailed realisation. You can shape the idea to meet your own

needs. And I'm sure you'll improve on it in many ways.

Readers are free to develop and distribute their own CAL lessons written using CALFORM, however we modestly suggest that Disk User is the best way of distributing such material. We would also appreciate feedback about any interesting or novel uses that you are putting CALFORM to in your work. We are also happy to receive suggestions for other useful educational programs.

GAMEPLAN

How to play tricks with the memory in your BBC, and survive!

Memory is the constant bane of every BBC programmers' existence. Again, there are tricks and tips that allow more memory than at first seems available. Below, there is a table showing all the possible free memory on the BBC and Electron in MODE 4 or MODE 5. This is vital in the creation of the memory map that you should make before coding your game.

005D-00C0 : Maximum zero page use without major problems

0110-01B0 : Maximum easily used stack space

0380-03DF : Tape buffer area : can be used to store variables, as a buffer for text etc.

0400-07FF : Free if you use 100% machine code only.

0880-08BF : Printer buffer : usable in games.

0900-0BFF : Free for games

900-9FF only free if using 4 or less envelopes.

B00-BFF free if not using function keys in the game to store strings of text.

0C00-0CFF : UDGs. Treat as free memory, and try and avoid user defined characters as these need proper VDU23 definition on a Master.

0D00-0DFF : Free on most standard systems. Some ROMs use this area, as do Electron interfaces. Leave free if you can.

0E00-57FF : Free. In development, if using a disk system, hold the data placed over &D00-&10FF on the screen and issue a ***TAPE** command and then download it over this area.

5800-7FFF : Screen memory.

If you don't need a full screen, and want some extra memory, I'd advise trying to tailor the game around a 20 line screen, as this makes it very easy for the Electron conversion. This is where the colour blanking interrupt falls making it possible to hide the data stored on the screen on an Electron too. This would leave &7100-&7FFF free on the table above.

So, if you are using mode 5 with a 20 line screen (as in most of my previous games since *Thunderstruck*), you'll have around 25K to play with (24K if you're using some BASIC).

Make A List

Now, make a list of all the features you want to include in your game. Every piece of graphics, block of data and table. Try and fit them to the gaps in free memory. Leave plenty of memory free for your code. For example, the total code for *Omega Orb* took 7K, for the simpler *Ransack* 5K, and the mainly BASIC *Hunkidory* took 9K. Now you should have a list of everything you need in your game. The graphics are usually a major factor in this. In mode 5, each character takes up 16 bytes (allowing for the four colours). So if you need to control a man four characters high and two wide, that is 128 bytes for each frame of animation. Ah, you might say, but say I'm writing an arcade game viewed from the side in which things face left and right : I'll need to hold graphics facing both ways, doubling the memory needed. Not so. All you do is hold a table of 256 reversed bytes. The *TABLE* program on this month's disk illustrates what I mean. This halves your memory needs (apart from the 256 byte table).

So now you have allocated memory for all the graphics you think you'll need in the game. Always allow some leeway somewhere (especially where the code is going to be) just in case you need more memory. The agony of rewriting an entire game for the want of 256 bytes has to be experienced to be believed.

Before you start coding the game, design some graphics. Design an entire game screen, as you'd want it to appear in the final game. The main character of a game such as *Thunderstruck* (SPRECO) was designed long before I'd even con-

sidered the idea behind the game: not good practice!. This is where a good graphics and sprite design utility comes in, and you will find a whole load of such goodies on next month's disk.

Get Coding

Now, you'll be ready to start to code your game. The only real decision here is whether to go for all machine code or not. If you've any doubts whatsoever about your machine code ability, don't try and write an entire game in it. It would be like passing 'O' level French and expecting to converse easily with any Frenchman you'd meet.

BASIC has its advantages: it tends to be faster to write and easier to debug. However, it's slower to run and takes up large amounts of memory for some operations that take up little space in machine code. However, for your first game, a little of both is a good idea. After a few games, you'll become more confident with machine code and the BASIC part will shrink until it reaches nothing.

If you're going to use BASIC, you must get to grips with compacting it to a stage where it becomes practical. This is where good programming practice and structure really go out of the window in the quest to save those bytes.

Read the User Guide's section on speeding up and saving memory. Using only the integer variables A% to Z%, you'll save huge amounts of memory, as these are stored in &404 onwards, not above the **TOP** of your program. If you need more, use a% to z%.

Think of as many ways to save memory as possible. I used to use computed GOSUBs and GOTOs, by setting a zero page location to some value in the machine code, and use GOTO or GOSUB?<whatever>. This limits it to 255 lines, and the first line of the program had to be GOTO1000

to skip by these subroutines. Putting the lines at the start of the program also speeds it up, as BASIC starts at the beginning and looks through all of memory trying to find the line requested.

Avoid using strings; hold the text in absolute memory and access it using the '\$' operator. This means you can set the strings up in a loader program and access strings taking none of the main program area up. Also, it saves complications in string operations, as BASIC can be very inefficient at some of them. Your machine code subroutines can also access the same information easily.

The most vexed question is how much memory to leave *above* your BASIC program and below **HIMEM**. It really depends on how complicated your program is. With few or no variables, strings or PROCs, you should be able to get away with 300 bytes for garbage collection, but leave a lot more memory when developing, as your BASIC program will probably expand. Also, when complete, play the game through to completion as many times as you can stand, to make sure it doesn't crash saying 'Out of memory'.

Don't be tempted to use the extra commands and features of BASIC IV in the Master as this will limit the market for the final product too much. Don't use any of the extra memory as well, as this will, to say the least, complicate the process of fitting the game into a standard machine!

A line such as the following:
COLOUR2:VDU26:CLS:PRINTTAB
(0,10);"SCORE:0";:VDU28,0,
19,19,0

can be broken down to the VDU codes

17,2,26,12,31,0,10,83,67,79,82,69,
58,48,28,0,19,19,0

and stored (with an extra CHR\$ 13 on the end) somewhere with 20 bytes free and called up from the BASIC core program by:

PRINT\$<where it's stored> (saving a lot of space).

If you have any spare upper-case integer variables, use them to store constants as this takes up less memory. Needless to say, cram as many statements on each line and put in as few spaces as the computer will let you get away with. Using tricks like this can save vast amounts of memory. There is no real substitute for using 100% machine code though, even if it's just because of the extra 1024 bytes freed by BASIC from &400-&7FF. These tricks also '6502-ify' your BASIC, make it more like assembly language, and help in the process of hopefully changing your programming style to include more and more machine code.

If you're writing a 100% machine

code game, then don't be afraid to use BASIC to test out your routines until you've written the main machine code core. Due to the lack of memory when assembling code, I split mine up into two parts. Again, this practice grew up out of having a secondary BASIC core. The first program contains all the main subroutines used by the main game, stored in the second part. The start values of these subroutines I pass from the first to the second via A% to Z%. This method obviously creates problems, but encourages structuring the program, separating the program into subroutines and main game. If written correctly, this method works well enough, allowing larger source files than could otherwise be used.



Gorgeous Graphics

Undeniably the most important feature of any game are the graphics. There is much debate over whether this is a good thing or not, as no matter how pretty a game is, it will be stuck on a shelf somewhere if the gameplay is rotten. However, in selling your game to the software companies, reviewers and players, you should realise how important the quality of the graphics are. I'm a little biased here; graphics has always been my favourite part of games writing, and I really enjoy it. I know many programmers who detest graphics design, but it simply has to be done, and done well! I'll assume you're writing a 2D game with moving sprites and/or background.

The first thing you should con-

sider is size. Try and have the biggest sprites possible. If necessary, trash other features to get the memory to account for this. Obviously, if the size of the graphics starts to interfere with the gameplay, then you've gone overboard, but this is a rare occurrence. Next is colour. This is limited by the mode you have chosen, but you can get more colours than at first look possible by a variety of methods. There is stippling, pixels of different colours close together. Also, you can try stripes. Cyan and yellow, for example, tend to produce a greenish effect on virtually all TVs and monitors. *Colour interrupts* seem almost compulsory nowadays on BBC games, and I'll cover those in detail next month. Next, you must avoid movement problems such as flicker or corruption when two sprites cross. This is not easy, but can be achieved with a little fiddling! The ***FX19** command is specifically designed to stop flickering, but moving too much around after issuing this command will inevitably lead to flicker. The way around this is to work everything out before doing the ***FX19** command. Work out the new sprite positions, check collisions, sense the keyboard and so on, storing everything, then do the ***FX19** and do all the graphics movement (erasing, printing and scrolling). If this still isn't enough, split sprite movement up. If you have eight sprites moving around plus the main character, move four one loop and the other four during the next loop. This can be split up more if speed isn't too crucial for your sprite movement.

Both flickering and corruption when sprites cross can be avoided by poking the sprite data directly on the screen all the time, and only rubbing out the part that needs to be erased. For example, if the sprite moves right, rub out the far lefthand strip of pixels and the rest is erased by overprinting the sprite. This creates problems with the background. If your game has no background, then this is fine. Games such as *Ransack* and *Codename Droid* make sure the main character moves only in front of bare backgrounds. In many games, the sprites must move in front of, or behind, many different backgrounds. Computers such as the Commodore 64 have a built in hardware sprite routine to handle sprite printing and background storage, but on the BBC you'll have to write your own. This is one of the trickiest routines to write, and crucial to your game. Of course, you can always use some of the goodies on the disk next month. Along with a colour interrupt routine for mode 5 that'll allow you to use eight colours in a supposedly four colour mode.

FLOPPY FUN

THE LAST OF THE
FREE
BITCHIL/XXVI ASL

Audiogenic Software.

THUNDER II

THE BITCHIL MASTER: © 1988

Catch up on writer Peter Scott's games releases

Peter Scott has been one of the more prolific BBC programmers over the past couple of years. We are naturally happy that he took up our invitation to let the rest of us in on his secrets in the *Game Plan* series. Here's a quick update on Peter's releases and some hints and tips for the converted.

Last of the Free

Electron version came first and then ASL spotted the game for BBC release. Did they know what they were starting?

Tips

- Peter's infinite energy poke:

10 !&670=&208D81A9
!&674=&8D06A902
!&678=&0EA90221
20 !&67C=&F44C04A2
!&680=&A90848FF
!&684=&04218DFF
30 !&688=&21606828
40 CALL &670
50 *FX14,4

HunkiDory

Released by Bug Byte on budget

after Peter had risen to fame!

Tips:

- When the title screen says "Press space bar" press CTRL-C (CTRL-@ on some) and press keys 1-10 for screens 1-10 or row Q-P for screens 11-20.

Thunderstruck

Originally titled TimeStorm.

Tips

- Peter Scott's own infinite energy poke:

10 !&60F=&208D20A9
!&613=&8D06A902
!&617=&0EA90221
20 !&61B=&F44F04A2
!&61F=&A90848FF
!&623=&04248DBD
30 !&627=&238DFFA9
!&62B=&60682804
40 CALL &60F
50 *FX14,4

Thunderstruck II: Mindmaster

Sequel to Last of the Free and Thunderstruck; the best of the three. New sprite system, detailed effects in 130 plus screens.

Tips:

- Get more energy by typing:
*LOAD MASTER
?&2001=49
CALL &1A50

Omega Orb

Classic arcade adventure involving the collection of various core pieces, alien killing, puzzle solving and so on. Floppy Fun's Dave Reeder summed up the game with: "The main character Blip is carefully crafted, the screens lively and the game plays easily and well".

Tips:

- Just enter GROVEL for an extra life!

Ransack

In *Ransack* a Zebedee-style AL bounces for all it is worth through eight levels of 104 fast scrolling screens. There are 42 different kinds of aliens with a couple of hundred different attack patterns!

As well as collecting weapons you must learn the scrolling terrain to survive.

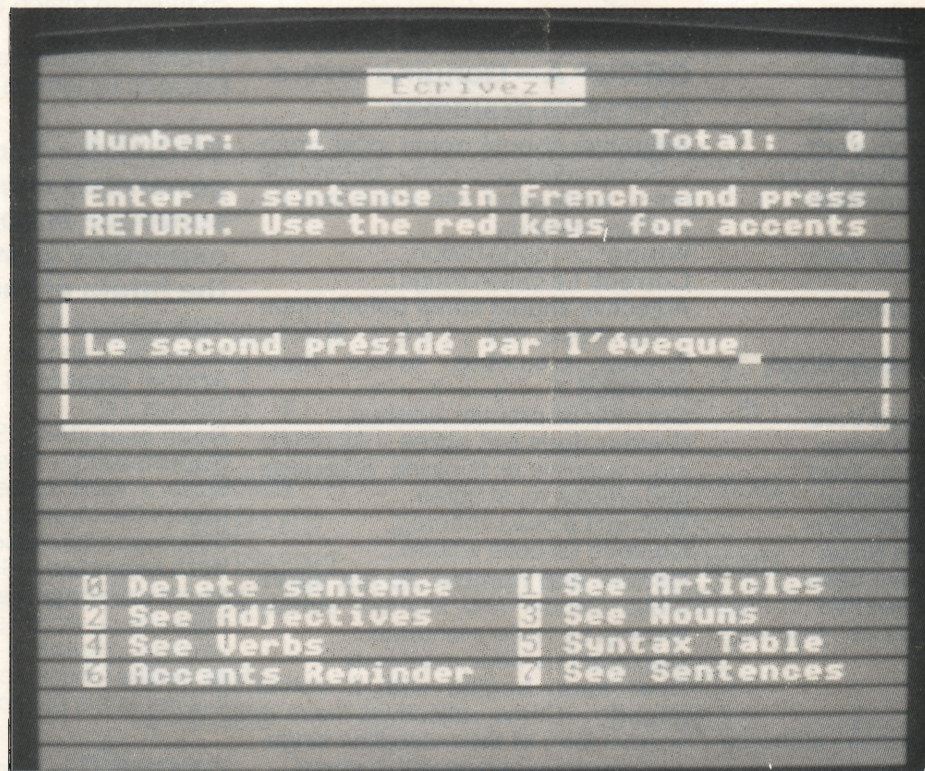
Tips:

- Enter RAMALAMADINGDONG on the high score table for about 230 lives. ● Press CTRL/f4 when the tune is playing on the title page or high score table. This should advance you a level each time you play.

You can update on Peter Scott's early, and promising, games with the Peter Scott Trilogy: Pandemonium, Network and Yoyo, price £1.99 from Top Ten Hits.

ECRIVEZ

This program is for anyone who wishes to practise writing in French. Because of the self-directed nature of the program it is suitable for any ability level



The basic idea of Ecrivez is that you type in sentences in French, which are then checked both for sensible meaning and grammatical correctness. Of course there are limitations, otherwise the program would require a mainframe computer and massive storage space to run. So you must use the words and structures the program understands. This still leaves you with many thousands of possible sentences!

What the program offers is the relative freedom to choose what you want to write, combined with instant and accurate feedback.

Getting started

Place the disk in the disk drive and press <SHIFT-BREAK>.

When the program has finished loading you will see the cursor flashing in a central rectangular box. This is the space reserved for you to enter a sentence.

Above this box is recorded the

number of the sentence you are about to enter and the total marks scored so far. The scoring system will be explained later.

Below the box is a reminder of the keys to press for various options:

0 Abort the current sentence

1-4 List the articles, adjectives, nouns and verbs the program recognizes in alphabetical order

5 List the sentence structures allowed by the program

6 A reminder of which function key to press for accents

7 List any sentences entered so far
Note that to see the information described above, the input of a sentence can be interrupted at any point. Follow the on-screen instructions and you will be returned to the point reached in your sentence and able to complete it.

Now enter a sentence, using the function keys for letters requiring an accent. When you have finished press RETURN. This will activate the checking procedure. Note that if a sentence contains a number of mis-

takes only one type will be indicated on the screen at any time. This is to avoid confusing the user with too much feedback. The checking procedure works from left to right. That is, a mistake at the beginning of the sentence will be indicated first. If you re-type the sentence with that mistake corrected, any mistakes further along the sentence will now be indicated.

Mistakes are indicated in two ways. Firstly, an arrow (or arrows) will point to the start of the offending word(s). Secondly, a message will be printed below the sentence box indicating the nature of the error.

If the sentence is correct a mark will be awarded. There are three marks for a correct sentence, plus a bonus equal to the number of words in the sentence. The minimum score is 6 marks and the maximum score is 10.

On the completion of ten sentences the final score and all the sentences entered will be displayed on the screen. Pressing the <Space-

bar> will reset the program for another user or another go.

Valid sentences

For a sentence to be passed as correct it must pass four tests!

(a) The program is supplied with a dictionary of words it recognizes. Obviously, a sentence must stick to these words. They can be consulted as often as required by pressing the appropriate keys as described above.

(b) The sentence entered must match one of 12 sentence patterns the program is able to understand. These are all listed below, though they can be consulted from within the program by pressing 5.

Article Noun Verb

Article Adjective Noun Verb

Article Noun Adjective Verb

Article Noun Verb Article Noun

Article Adjective Noun Verb

Article Noun

Article Noun Adjective Verb

Article Noun

Article Noun Verb Article

Adjective Noun

Article Noun Verb Article Noun

Adjective

Article Adjective Noun Verb

Article Adjective Noun

Article Adjective Noun Verb

Article Noun Adjective

Article Noun Adjective Verb

Article Adjective Noun

Article Noun Adjective Verb

Article Noun Adjective

Examples of sentences following pattern 1:

Le chat mange.

La femme chante.

Examples of sentences following pattern 12:

Le vieil homme vend la voiture allemande.

Les petites filles cueillent des jolies fleurs.

(c) The following grammar rules must be observed:

Agreement of article and noun, including use of 'l'

Agreement of noun and adjective, including second form of masculine singular eg. vieil homme

Correct position of adjective before or after noun

Agreement of subject and verb ending for -er, -ir, and -re verbs

Agreement of subject and verb ending for irregular verbs

Correct usage of transitive and intransitive verbs

Correct spelling including accents and cedilla

(d) Finally, the sentence must pass a semantic test. The program can tell whether a particular combination of words is meaningful. This data is stored as part of the dictionary.

Sentences such as 'La femme cueille l'autobus' or 'Les chats bleus mangent' will be rejected with the error message: "Odd meaning!"

Note that some combinations of noun-adjective or noun-verb or noun-verb-noun are obviously sensible and others are obviously illogical or impossible. However, for some it is a more subjective matter and you may find you disagree with my judgement! I have tried to err on the side of tolerance.

Error messages

As well as pointing to the word(s) involved in an error the program will print an error message. The possible messages are listed below:

GROUP A – Genuine errors of French grammar

Adjective should come after noun – Some adjectives come before the noun, some after and some can be in either position.

Wrong: Le rouge ballon...

Correct: Le ballon rouge...

Adjective should come before noun – See above.

Wrong: L'autobus before noun premier...

Correct: Le premier autobus...

Gender does not agree – All nouns are masculine or feminine. Adjectives and articles must agree.

Wrong: Le beau voiture...

Correct: La belle voiture...

Gender and number do not agree – See 'Gender' and 'Number' errors.

Wrong: La vieille manteaux...

Correct: Les vieux manteaux...

Hint: noun begins with a vowel sound – Some adjectives have a special form of the masculine singular if the noun begins with a vowel.

Wrong: Un vieux homme...

Correct: Un vieil homme...

No verb – Every sentence must contain a verb.

No verb ending – You have given the stem of the verb only.

Wrong: La femme regard.

Correct: La femme regarde.

Number does not agree – All articles and adjectives must take into account whether a noun is singular or plural.

Wrong: La belle voitures...

Correct: Les belles voitures...

Odd meaning! – The grammar is correct, but the meaning dubious! See section 'Valid Sentences (d)' for examples.

The verb requires an object – Some verbs are transitive and require an object.

Wrong: L'homme donne.

Correct: L'homme donne la lettre.

The verb should not have an object – Some verbs are intransitive and should not take an object.

Wrong: Le chat tombe l'armoire.

Correct: Le chat tombe.

Use l' – Before a noun beginning with a vowel le and la become l'.

Wrong: Le homme arrive.

Correct: L'homme arrive.

Use le or la instead of l' – The opposite of above.

Use the ordinary masculine singular form of the adjective – The opposite of 'Hint: noun starts with a vowel sound'.

Wrong verb ending – Verb ending must match subject.

Wrong: Le chat attendez.

Correct: Le chat attend.

You've forgotten to alter the ending – The verbs listed in the program are in the infinitive form – same as in a dictionary. The ending must be changed to match the subject of the verb.

Wrong: La femme arriver.

Correct: Le femme arrive.

GROUP B – Errors generated even if a sentence is correct, but caused by going beyond the limits of the program

Adjective only – The syntax only allows an adjective at this point.

Article expected – See Syntax Table.

Noun expected – See Syntax Table.

Superfluous – The program recognizes a valid sentence in the initial part of the input, but there are superfluous word(s) at the end.

Verb expected – See Syntax Table.

Word unrecognized – This could be because a word is genuinely spelt wrongly, including missing accents or cedilla (check spelling) or because it is not in the program's dictionary.

GROUP C – Same as Group B, but in this case the user is not penalised and can enter an alternative sentence

Correct, but you have already used this sentence – To prevent an unfair way of obtaining a high score!

Repetition is boring, try again – The program tries to discourage the lazy use of the same noun for the object and subject of a sentence.

Wrong: La fille quitte la fille.

Similarly with adjectives.

The maximum length of a word is 15 – Dictionary specification.

The maximum number of words is seven – See Syntax Table.

The minimum number of words is three – See Syntax Table.

Note to teachers

Before pupils are allowed to use the program the meaning of the error messages must be made clear to them, and also the fact that the program can only handle a limited number of words and sentence structures.

A&B

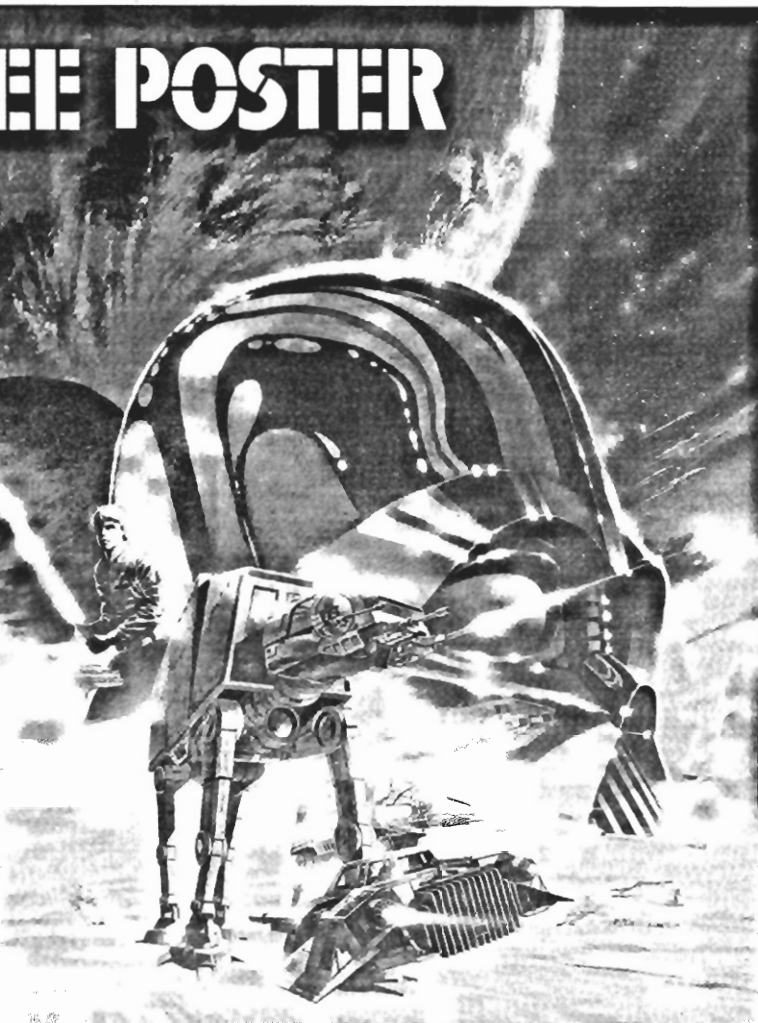
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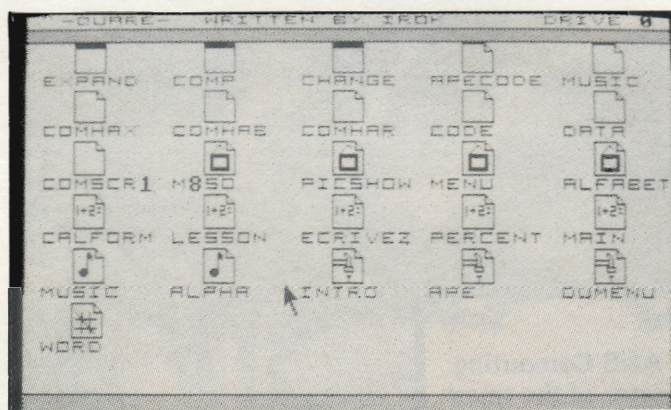
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QUARE

Stylish Macintosh like menus,
with the minimum of fuss



QUARE is a user friendly front end to the Acorn DFS, allowing you to run programs by simply selecting an icon representing the program you want.

Setting up a Quare disk

QUARE comprises of just one file which should be *COPYed to any disks it is to be used on. A !BOOT file should then be built which simply chains QUARE. To run the disk simply press <SHIFT><BREAK> and QUARE will do the rest for you. To gain maximum benefit from QUARE you will however have to rename most of the programs on your disk using the following key:-

Note: Files prefixed with the machine code letter will be *RUN and files with the BASIC letter will be CHAINED. Files prefixed with an 'S' however will be *TYPED. When QUARE is then run each file will be given its own icon with the filename listed underneath, exactly the same as on an expensive GEM system!

USING QUARE

Using QUARE couldn't be simpler! Move the arrow pointer using the cursor keys until it is above the appropriate program and press

<RETURN>. The program will then be *RUN, or CHAINED as appropriate.

To examine the reverse side of a disk, move the pointer to the bar across the top of the screen and press <RETURN> the contents of side two will then be displayed. To return to side one of a disk repeat this process.

Making The Most Of Quare

Due to the fact that QUARE is intended to be a menu program which you will probably copy onto most of your disks, in order to conserve as much disk space as possible it is **VERY** compact and is not particularly easy to modify. Improving the program should be undertaken with the utmost care because the icon data which is stored at the end of the program is **EXTREMELY** easy to corrupt (I speak from experience!!) ALWAYS copy QUARE using *COPY to prevent the corruption of these icons.

To save time and effort we recommend that you create your Quare disks in conjunction with the APE utility supplied on this month's disk. You may also find that programs which CHAIN other programs, or read data files do not work correctly with Quare. This is because they expect files to be in the root (\$) directory. This problem can usually be overcome by either modifying the program code, or replacing the offending files in the root directory.

If there is any demand I can supply an icon definer to customise the built in icons.

Directory prefix		
M/Code BASIC		
A	BGENERAL DATA	
C	DDATABASE	
E	FEDUCATION	
G	HGAMES	
I	JIDEAS	
K	LSPECIAL	
M	NMUSIC	
O	PGRAPHICS	
Q	RPRINTER	
S	TW'PROCS	
U	VUTILITIES	
W	XFINANCE	
Y	ZPUZZLES	
[\CHARTS	
]	↑ANYTHING WHICH DESERVES A PRETTY ICON!	

DISK DATA

In depth review of an historical database

Time Lines is an innovative attempt to present historical information in an attractive graphical way. The main screen of the package is actually a horizontal scrolling ribbon marked at intervals by dates. Above and below this, information relating to events and periods is marked, together with small icons to indicate items of special interest.

Pressing a key takes you into a card index, which gives greater detail about the date or period selected. From this screen, you can access a Mode 7 drawing screen, allowing you to create illustrations to accompany textual information. It is also possible to cross reference with other *cards*. Sample European, and American data is provided, but the main thrust is to aid in the creation of your own databases.

The package is disk based, and only limited by the capacity of your drives, although twin 80 Track disk drives are advisable for the most effective use of the program. In use, the package has much to commend it. The concept is excellent and it has enormous potential, not only for schools but also for Tech Colleges and Colleges of Education as well.

Use in Primary Schools

Most schools have one computer at least and within the primary field, Time Lines could be used to advantage; firstly to gain a historical perspective of time, which is by no means easy to teach, and secondly to develop a specific aspect of history. In the latter context, I could envisage the development of family history as bringing a new dimension to the *Social History* which many primary schools are teaching. It could for example be linked to museum items brought in by pupils for exhibition, photos, letters, newspaper cuttings, coins and medals, every day objects of the past, or other artefacts of an era.

But it is not just history that would benefit. There would be spin-offs; poems and playlets, role playing and imaginative writing, reading and developing the art of *precis* writing. The imaginative teacher could go well beyond, allowing small group work unlimited scope.

Numbercopter

Flying starts to early learning skills.



Use in Secondary Schools

It is however in the secondary area that I can see the greatest potential, particularly in those schools doing SHP (Schools History Project). The opportunity for developing specific information relative to 4th and 5th Year GCSE work is tremendous. Cards on local history could be typed and augmented with drawings wherever relevant. Information on America or Ireland or wherever could be collected, sifted and presented for the use of all pupils. But it is not only SHP history that benefits from

this disk. Political or Social and Economic History cards too could be developed. Lest the rest of the school be forgotten, the skills required in GCSE for completing the seven or eight coursework tasks could be begun much lower down in the school.

Favourable Pupil Reaction

I gave this package to some 12 to 13 year olds in the first year. They said they enjoyed it. One lad soon worked out how to move the time lines to advantage. One bright girl soon used the search facility. When asked

for their comments afterwards, they gave favourable replies. One girl liked following the symbols. One boy said it was like an arcade game, it moved all the time. Another found the range of time intriguing.

Ambiguity

Time Lines, however does not do justice to itself. It cannot make up its mind whether to aim for primary or secondary age pupils either here or in America. Words such as *regicide* are not explained, yet *Protector* (dictator) is. Whilst *veto* may be understood by top juniors I doubt that *enfranchisement* would be, even by many Secondary age pupils.

Inaccuracy

If this package is to be presented to schools then I think we ought to expect good English, correct spellings and historical accuracy. I do not like "Geo I spoke no English and having little interest in things English delegated to the Whigs". The word *possessions* has 2 pairs of 's' and Archbishop Land should read Archbishop Laud. I wondered when, or even which part of South America was part of the British Empire. The Dutch Wars have to be accurately identified for they extend beyond 1674. As for Caesar and Cleopatra, that is another story. Anyone who participated with British led forces or who remembered the 2nd World War would have to realise that the card 1941-45 was a follow on from the previous card relating to Pearl Harbour. The British effort is confined to card 1939-45. What all this seems to indicate is the need for a proof reader and someone with a good background of history to avoid irritating and unnecessary mistakes.

Overall Impressions

The package is well presented even if instructions are difficult at times to follow. I found for example that *Escape* would delete a line on a card entry but I did not come across this in the instructions. The drawing Board was difficult for children to find. It required adult help, and I did not find it so easy either! Again, more simple and instructions would have helped.

However, the more I studied and played with the package, the more I realised its potential and the more I liked it. It does take time to become conversant with all its intricacies, but the effort is worthwhile. Teachers are offered another very useful tool. Pupils are offered another facet to Information Technology. Yes I liked it, I'd buy it.

Ken Brown is a representative on the GCSE management committee for the East Midlands. He is a History teacher and Deputy Headmaster.

Supastore Plus or Minus?

Is the latest release from ESM a real upgrade to their successful database product, or just a cosmetic adjustment to hide an old lady's wrinkles.

First looks show only the addition of a new disk to the pack supplied. On the disk are a selection of utilities vital to any serious database user, including mail merge, and file import utilities. In addition however there is a new EPROM, and the Version 2.0 Utilities supplied make installation on a hard disk much simpler.

For those unfamiliar with Supastore, it is a combination ROM and disk based Database manager program. It is a random access database, meaning that all the data is accessed from the disk surface, rather than loaded directly into memory. This means that the amount of information stored is only limited by the size and type of your disk drives. For example with twin double sided 80 track drives 14,579 fifty character records can be stored, but only 91 1000 character records on a single 40 track drive. The program is menu driven like *System Delta* but unlike that program it is in Mode 3, and therefore requires a monitor.

In Use

for the purposes of this review I decided to install Supastore on our Master 128/Solidisk hard disk combination. This was made more difficult by ESM supplying a duff EPROM. Fortunately however a spare lying around the office was found to be serviceable. Also a telephone call to ESM produced much good advice on how to configure the system.

Once installed the program was a joy to use with fast response, and no disk swapping. I would even go so far as to say that a hard disk is essential for efficient use of this program, as when used from floppies the constant disk swapping is extremely irritating. Supastore also has the advantage of being designed for networks from the start, probably the best environment for the package. Its ability to support multiple users makes it by far and away the best database manager for networks. One black mark however is that at present the ROM chip is protected, and so loading the *RAM image* into sideways RAM on diskless network stations is impossible.

In most cases however Supastore Plus will be used for administration, and management of pupil data. For this it is ideally suited, possessing as it does a wide range of query options, and the ability to do mail merging. ESM have already noted this, and are in the process of bringing out tailored applications for Supastore including a *Pupil Profiling System* and *Library Management System*. Supastore will also run on

the Archimedes (with emulator), and they claim that on a hard disk 440 the system was clocked at *five times* the speed of System Delta.

Positive and Negative

What System Delta, and Viewstore do possess is the ability to manipulate numerical data to produce reports with summaries, costings and so on. Supastore Plus can also do this, via the *Global Field Editor* option, but it is limited mostly to processing textual information.

Where Supastore does excel however is in the documentation, which is both well written and legible (take note Minerva), and so the time taken to learn about the program is much reduced. I would not however recommend Supastore as a vehicle for teaching fundamental principles of Data management to young teenagers, they do not have the patience for it, rather I would use our own *Tracer* (available on Disk User 8) program for that purpose, and keep Supastore for serious work.

Numbercopter

Just time for a quick review of another new product from ESM.

Software for very young children is hard to find, and difficult to write. Numbercopter is aimed at the age range three to five years. It consists of eight programs with 24 games in all. Experience is given in matching and memorizing pictures and colours; there are games to promote logical thinking and games involving hand eye coordination.

Number games give practise in recognising number patterns and symbols, sorting and counting and using the ideas of *more* and *gone away* to introduce addition and subtraction.

There is also a game to develop language and reading, and even one which introduces simple rhythms. Although the programs can be used in any order (with options for the degree of difficulty) skills acquired in the earlier games may be needed for the the later programs.

Attitudes are positive and encouraging, but avoid the competitive elements of timing. Because very young children may find the whole keyboard confusing, it is suggested that most of it should be covered, as the only keys needed for these games are the arrow keys, function keys, <RETURN> and <SPACE BAR>.

Included in the package is a manual which also offers ideas for further activities, and function key cards appropriate for the different games. Teachers please note a colour monitor is essential for most of the programs.

ESM, 32 Bridge Street, Cambridge, CB2 1UJ. ☎ 0223 65445

APE

APE allows you to make a copy of a file on the same disk surface resulting in a clone of the original program. It may also be used to copy between different sides of the same disk (eg drives 0 and 2 or 1 and 3) which has the effect of *COPY and *RENAME in one go

APE is written in assembly language, so a BASIC source file is provided on the Disk User disk as 'APEcode'. After CHAINing this program it assembles and saves to disk the machine code utility under the filename 'ape'.

To run the utility, place the disk user disk (or any other disk to which the file 'ape' was copied) into the disk drive and type:

***APE <source> <target>**

where <source> is the name of the file to be cloned, and <target> is the name of the destination file (ie the the new file). Ambiguous filenames (using the wildcards * and #) are not allowed. If there is already a file on the disk with the same name as <source>, it will be overwritten (unless it is locked).

The file names may include the drive number and the directory, for example:

***APE :0.\$APEcode :2.C.ape**

will save on drive 2 a file called C.ape which is a clone of the file APEcode from drive 0. In this example, we used APE to COPY a file and RENAME it in one go. Here 'APEcode' is the source file name and 'C.ape' the target program.

The drive number (set by *DRIVE) and directory (set by *DIR. The default is \$ on the DFS) may be omitted if the previously selected values are to be used.

Using APE

After loading, APE asks you to hit a key. This allows you to swap disks in case the file you want to clone is not on the same disk as APE. Should you decide to abort, hitting <ESCAPE> at this stage leaves APE.

In some circumstances, an error message is given. For your convenience, the error messages are listed here along with the error number (to read this value from BASIC type PRINT ERR) and an explanation of how to fix the error.

The following errors are caused by the specification of the target filename:

● **Catalogue full 190** occurs if

there are already 31 files on the drive and the target filename will be the 32nd. To cure the error delete files that you don't need from the disk, or use another one.

● **Can't extend 191** If there was already a file on the disk with the same name as the target filename, the DFS will try to put the clone in the place of that particular file. However if there is no space for the new file this error is given. To cure it, first delete the old file and rerun APE, or alternatively, use another name for the target file.

● **File locked 195** means that the specified target filename exists as a locked file on the disk. If you don't mind losing the old file, use the *ACCESS <file> command to unlock it and then call APE again. Alternatively, use another filename.

● **Disk full 198** means that there is no space left on your disk. Usually using *COMPACT will help but don't use this command if there are data or programs in the computer's memory as it wipes them.

● **Disk read only 201** indicates that the write protect notch at the side of the disk has been covered to prevent erasure of any files.

The next three errors are generated for different reasons:

● **Bad filename 204** indicates an illegal filename specification (in the view of the DFS). Consult your DFS manual as to the correct entries for source and target filenames.

● **File not found 214** the file you wish to clone is not on the disk. Check with ● CAT which files are there.

● **Syntax 220** is generated by the utility rather than the DFS if any filename (including the drive number and directory, if specified) is larger than 12 characters. See the suggestions for the previous error. It is also given if you omit one or both filenames, in which case read the instructions again.

● **Bad Command 254** means that the APE machine code file is not on your disk. LOAD and RUN the APE-code file from your Disk User disk to create a new copy of APE.

If you want to place APE on another disk, you should copy the file called APE from the Disk User disk to the new disk using the *COPY command.

How it works

The filenames are read from the operating system buffer to a reserved chunk of memory within APE. Then the files are opened for byte access via OSFIND with X and Y holding the address of the filename. When A (the accumulator register in the 6502 chip) holds a value of &40 it represents a request to open a file for input only. A value of &80 means that a file is to be opened for output only. On exit A contains the file handle, which is a value assigned to the specified file by the DFS to distinguish it from other open files.

The main program follows. A loop reads byte after byte from the source drive by calling OSBGET with the Y register set to the appropriate file handle. After that call the CARRY flag is examined to decide if the end of the file has not been reached yet (in which case C=0) so the byte is written to the target file using OSBPUT with Y set to the destination file handle.

When the end of the source file is reached, OSFILE with A=5 is used to read the source file's catalogue information which is made of the load, execution and size of the program as well as its attributes. Hence if the source file is locked, the cloned file will be locked too!

The parameter block contains 18 bytes, but only the first two are significant for that call. They point to the address of the source filename. On return from the call, the parameter block information is updated by the DFS. APE replaces the filename address (ie the first two bytes of the parameter block) with the address of the target filename, and calls OSFILE with A=1 which writes the information on the parameter block to the catalogue entry for the target file.

Finally all open files on the disk are closed and the utility transfers control to BASIC or the language from which it was called.

MASTER WORD

A guess the word game to tax your powers of concentration

Master Word, is a word game for two players, based on the TV game show LINGO. The program has been written on a BBC B with a 1770 DFS, and is BASIC 1 compatible. The program is easy to understand as it is documented throughout with REM statements. There are no instructions for use within the program itself these are outlined below.

1. When greeted by the title page enter the names of the two players (5 letters max).

2. The player whose name and score appear in yellow plays first.

3. Each player has four attempts at guessing a five letter word whose first letter appears at the top and to the left of the screen. After each attempt at the word the players input will be marked, a YELLOW letter indicates a correct letter in the correct position, a RED letter indicates a correct letter in the wrong position, a MAGENTA letter means the letter is incorrect.

4. If after four attempts the word has not been discovered then a BONUS move is awarded to the other player.

5. If after a BONUS move the word has still not been found then the ANSWER will be displayed at the bottom of the playing area.

6. Play passes alternately from player to player until one of the players gets twenty points or more.

7. It should be noted that the computer waits for a key press before moving on to a new frame and before starting the AWARD ceremony at the end of the game.

8. All words used, **1160 in all!** have 5 letters, and no two letters are the same in any one word and no plurals are used. I apologise now for any words found not to fit this description.

Alternative rules are the use of a time limit, simply press RETURN when a suitable period has passed, and the use of *real* words only, delete the illegal word and press RETURN.



COLLECTOR'S ITEMS

Guess what the letter N has in store this month in the Abbas Alpha to Omega of animation. Just press N from the animation menu to find out.



Letters A-M available in Back issues. For instructions on how to use the menu see Issue seven.

NEXT MONTH

December issue out – November 18th

Let's Go Crazy!

Disk User lets her hair down and Boogies! We've got games coming out of our ears. Games for everyone. There's Strategy, Adventure, Arcade, and Multi-player, something for everyone in fact.

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Maelstrom is for all those people who are nostalgically looking back to the days of mindless shoot-em-ups. This game is totally mindless, and great fun. What's more you could

build one like it. How, you'll find out. **Operation Sea Lion** is for people who like to take their games at a slower pace and use their braincells instead. A superb graphical interface betrays the presence of the man behind Repton 2 and 3. The

game is a simulation of what would have happened if Adolf Hitler had actually invaded. You are in command of our Troops, do NOT fail us. **Also: utilities, sector zero, discussion, animation, news, reviews and articles.**



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Ants!
Expert investigator
Word Wars
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Mode 7 machine code
Software Manager
Guide to essential games on disk
Operating with OSWORD
Which RAM disk?

Disk User Five:

How your disk drive works
Program transfer
Arkenoid/Thrust cheats
Ravenskull screen maps
Magic Wall puzzle
Save Your Bacon
Disk User theme tune
Disk routine library
Overlay techniques
Spock's logical disk menu
Toolkit character editor

Disk User Six:

Clip Art
Codename
Droid Maps
Zoom Lens (e)
Collectors Items
Psychebrot Mandelbrots (e)
Hot Key! - Anytime Anywhere
Pixel Perfect
Blobber (e)
Martian Nim (e)
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Full advertising demo on disk of Brian Clough's Football Fortunes from CDS (e)

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System Wadgebury arcade adventure
How to Write a Hit Game - the

routines you need (e)
Procedure Library Manager, with range of procedures (e)
Superfont printer driver (e)
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Background Print Utility (e)
Specialist disk formatting (e)
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Pulsating colour (e)
Multimode (e)
Greyscreen (e)

Disk User Eight:

Ecosoft - Life
Easypoke ultimate cheat program.
Monster list of extra lives and extended play time
Collectors Items
Disk Editor(e)
Tracer Database(e)
Hyper Driver Demo, NLQ font(e)
AutoBASIC (e)

Disk User Nine:

A.C.E. - sprite editor
Orcrest - Arcade adventure (e)
Starting Out - Assembler
Artificial Intelligence Investigated (e)
Collectors Items
Memory Lister (e)
Multitasking demo (e)
Flash Fonts - screen fonts
Kings and Queens tracerfile (e)

Disk User Ten:

Textshape
Orlonds Meanies
Dynamic Doodles (e)
Starting Out Assembler, Hexfind 2 (e)
Collectors Items
Repton Map Printer Patch (e)
Fastlife
View file adjuster (e)
Slick Screen Clear (e)
Laser Letters (e)
Animation Auto Sequencer
Dewey library system Tracerfile

Disk User Eleven:

Starting Out - Assembler (e)
3D Graph (e)
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Splash Mode 5 pixel editor (e)
Dynamic Doodles generator (e)
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Star Scroller Windows made easy (e)
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SOFTWARE BACK ISSUES

Issues one, three and four are available as laserset manual and floppy disk for £4.00 each. Order from 9 Hall Road, Maylands Wood Estate, Hemel Hempstead, Herts HP2 7BH Tel: 0442 211882

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Collectors Items
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Auto Cataloguer
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Disk User Three:

Calculator
Dual catalogue creator
Cholo Player's Guide
Auto Save
Quick Break
Tazman
Feeling the Squeeze
Count with Teddy
Quick Copy
Collectors Items

Disk User Four:

SIDE 1:
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Blockade
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Random Access Tutorial
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NEW>>>NEW>>>NEW>>>NEW

Screenmaster

Video effects software

Professional video effects and advanced image processing. These machine code routines can be used to process any Mode 0, 1 or 4 graphics and are especially designed for use with digitised pictures.

The * commands are easily programmable for enhancing your own programs with "slides", "bangs", "fades" and many other screen effects. Screens can of course be recorded realtime onto video tape to create title pages, information screens and interesting links between footage. Pictures can also be prepared for desk top publishing packages.

Also included is a set software which works directly with the Watford BBC video digitiser, offering user-friendly capture and animation of digitised images.

All in all, this is the most comprehensive suite of software for manipulating digitised images on the BBC Micro. Price: £8.00

NEW>>>NEW>>>NEW>>>NEW

Disk User on Compact

TELL YOUR FRIENDS!! 640K of Disk User software on 3.5" disk for Compact owners

Disk User leads the way, delivering 100K of useful and entertaining BBC Micro software on disk every month. Due to popular request we have transferred all our Master-compatible programs to 3.5" disk for Master Compact owners. Incredible value at £15.00 with full documentation – that's a 25 page manual – and easy to use menu structure.

AVAILABILITY AND PRICE

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ADFS	DB17	£10.00
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Musician	DB06			
Mode 7 Utilities	DB12			
Adventurescape III	DB20	DB28	DB35	
Combat Zone	DB21	DB30	DB32	
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Graphics pack 2	DB29	DB34	DB38	DE29
Colour Icon	DB36			
A&B Bibliography	DB40	DB53		
Bibliography Upgrade	DB55	DB54		
Statistics	DB41	DB42	DB43	
Home Office	DB46		DE46	
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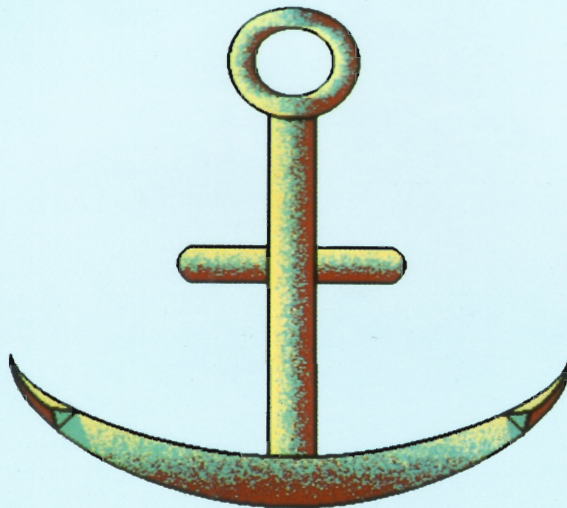
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